

AUGUST 1921 ~ No 187

Monthly

A Reference for Buyers

HITCHCOCK'S
**MACHINE
TOOL LIST**

Distributed Free to Machine Tool
Users Everywhere in the United States and to
Dealers in American Machinery Abroad

Published by
A. H. HITCHCOCK
1220-1235 Caxton Building
Chicago

FOR INDEXES SEE LAST PAGES

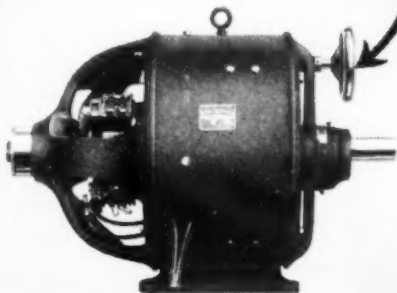
TO CHANGE
THE SPEED TURN
THE HAND WHEEL



For your machine tools you need an easy way of changing cutting speeds to suit all sizes and kinds of material. The simplest and surest way of getting just the speeds you want is by applying Type AS Reliance Motors. They run at any speed with a constant horsepower output over any range up to 1 to 10. *For details get Bulletin 1014.*

Reliance Electric & Engineering Co.
1050 Ivanhoe Road, Cleveland, Ohio

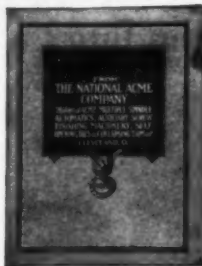
BRANCHES: Boston, New York, Philadelphia,
Pittsburgh, Chicago, Cincinnati, Detroit



Type **AS** Adjustable Speed
RELIANCE MOTORS







ACME

MULTIPLE SPINDLE AUTOMATICS

When you consider Automatics the question of how cheap you can get the machine is not nearly so important as the one of how cheap you can turn out the good work for which you are buying the machine.

The new 3 and 4th Acme Multiple Spindle Automatic will turn out from 200 to 350 per cent greater production than you can expect from other methods in these capacities.

Some very important improvements have made these new results possible—among them are faster cutting feeds, broader tool standardization and greatly reduced operating costs.

And don't forget you are making an investment which must still pay out after long and hard usage.

Consider Acme Automatics on this basis

THE NATIONAL ACME COMPANY

CLEVELAND, OHIO

New England Plant, Windsor, Vt.

Canadian Screw Plant, Montreal, P.Q.

Branch Offices:

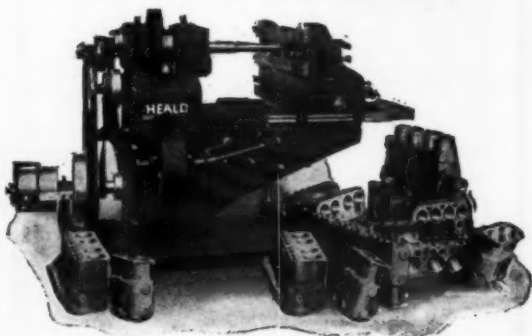
NEW YORK BOSTON CHICAGO DETROIT BUFFALO

WAREHOUSES—NEW YORK and CHICAGO

REPRESENTATIVES IN PRINCIPAL FOREIGN COUNTRIES

Makers of Gridley Single and Multiple Spindle Automatics at Windsor, Vt., and Acme Automatics, Threading Dies, Collapsing Taps and Screw Machine Products at Cleveland, Ohio

Are You Heald Equipped To Do Regrinding?



No doubt you do general repair work for automobile owners and garages, but have you the proper tools to handle cylinder regrinding?

Without question, there are the greatest opportunities in this particular field and it is the most active of any similar proposition in the United States today.

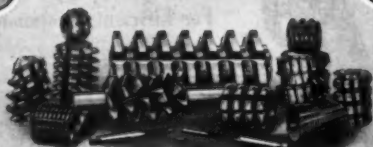
Many are so successful that they have given up their previous business and are doing regrinding entirely. There are many localities where there is not a single shop Heald equipped to do this work.

*Let us send you literature showing
you the possibilities and profits.*

The Heald Machine Co.

6 New Bond St., Worcester, Mass.

BROWN & SHARPE



HOBBS

Spur Gear
Spiral Gear
Wormwheel
Saw
Sprocket
Splined Shaft
Ratchet
Special
Purpose

*There IS A REASON
why they satisfy so
thoroughly —*

they are made from the
best material obtainable
— by skilled workmen,
equipped with the most
accurate tools —
scientifically heat treat-
ed — rigidly inspected
before shipment —
giving the assurance of
Brown & Sharpe
Quality

BROWN & SHARPE MFG. CO.
PROVIDENCE, R. I. U.S.A.

Complete Line of Willard Power Presses

(Inclinable Open Back)

**For Efficient, Economical
Sheet Metal Press Work**



Built for hard service and embodying the latest power press improvements. All parts practically interchangeable. High grade steel shaft capable of withstanding the heaviest strains. Latch has positive safety stop making it impossible for press to "repeat" until the treadle is pulled clear down.

Powerful--Accurate--Durable

Full details on request

The Willard-Middletown Machine Co.
Cincinnati, Ohio

Successors to The Willard Press & Tool Co.

L-J Inclinable No. 4 Punch Press

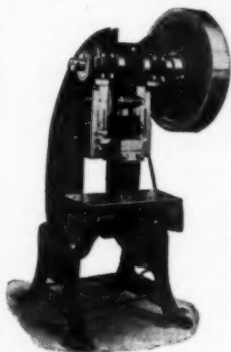
Capacity, 34 tons. Backed by 25 years' experience in specialized Press manufacture. It is accurate, speedy, convenient and safe. Also made in geared head and combination types.

Our Dealers

Herberts Machinery & Supply Co.,
San Francisco and Los Angeles, Cal.
Northern Machinery Co., Minneapolis
Brown Machinery Co., St. Louis
English Tool & Supply Co., Kansas
City, Mo.
Stocker-Rumely-Wachs Co., Chicago
W. J. Baird Machinery Co., Detroit
Cyril J. Bath & Co., Cleveland, Ohio
Reliance Mch. Sales Co., Pittsburgh
H. D. Larkin Supply Co., Dayton, Ohio
Joseph Beal & Co., Boston, Mass.
Dale Machinery Co., Inc., New York
J. L. Lucas & Son Inc., Bridgeport, Conn.

Write to the nearest, or

Loshbough-Jordan Tool & Mche. Co.
Elkhart, Indiana



Lifetime Service—*plus*

Goes with every Terrell Steel Locker



The "plus" is:—

Cleanliness

Convenience

Privacy

No replacements

No repairs

Less fire-hazard

Less space needed

But first of all

You obtain *service*—durability. You install Terrell Steel Lockers and they serve you for a lifetime—long after the first cost has been forgotten. And the first cost may not be as much as you imagine—we shall be glad to forward facts and figures.

Put your locker problem up to our experts

Terrell's Equipment Company

Hall & Division Sts.,

Grand Rapids, Mich.



Dependable Punches

For

Maximum Output

You value a punch for the quality and quantity of work it will produce. For 30 years many large manufacturers have placed a very high value upon

T. H. L. Punches

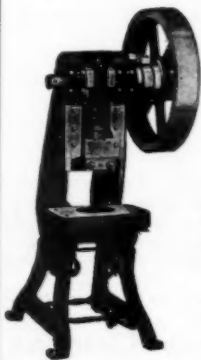


because T. H. L.'s are correct in every point. They insure a steady delivery of uniform, accurate and dependable work. Prompt shipment of all regular sizes. Specials on short notice.

Why don't YOU try them?

T. H. Lewthwaite Machine Co.
417 East 31st St., (Est. 1890) New York City

Here Is A Press



With Plenty of Steam
Back of THE PUNCH

HIGH DUTY
ROCKFORD
PUNCH PRESSES

Made in straight side and inclinable types. Their great power backed by rigid design enable them to do the work you demand and stand up to it.

Write For Catalog

Rockford Iron Works
Rockford, Ill.

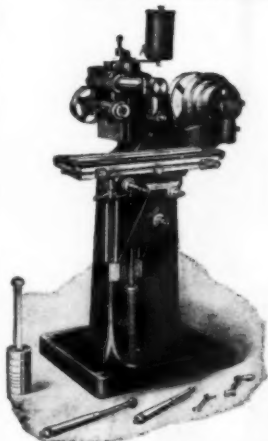
Spring Foot Press

Write For Circular



The Taylor & Fenn Company
Hartford, Conn., U. S. A.

**The Hand and Weight Feed
No. 1 U. S. Improved Miller
Offers Unequalled Service**



It saves wasting power and labor by doing milling jobs at less cost than is possible on large, heavy duty millers.

Specially good for rapid output of small duplicate parts.

It has unusual adaptability and great range with more power than any other miller of like type, hence its unrivalled merits for quick and accurate production. Vertical and horizontal feeds being independent, work can be held close to table so that miller may be used as a profiler. Vertical feed is separate from table and the head is accurately counter-balanced, enabling light milling operations on long and heavy pieces to be performed without breaking cutters. Table is adjusted by hand lever and crank feed with rack and pinion. Automatic feed secured by weight attachments. Its distinctive merits will well repay your careful investigation.

Full details on request

**The United States Machine Tool Co.
Cincinnati, Ohio, U. S. A.**

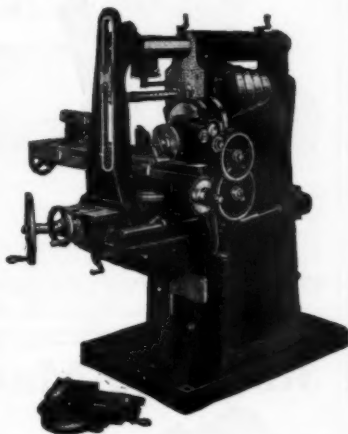
American Universal Miller **Back Geared**

Rugged—Rigid—Reliable

**Furnished, if
desired, with**

**Swivel
Vertical
Milling
Attachment**

**For all kinds of
vertical milling**

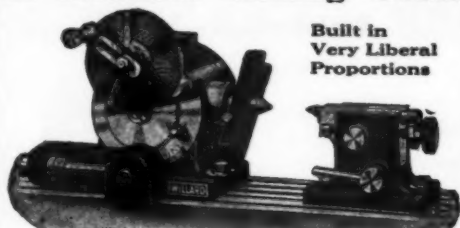


Its ruggedness enables it to take care of the heaviest strains. Wide bearings, accurate alignments, simple adjustments and ample lubrication help to explain its marked superiority. Equipped with power cross feed and power longitudinal feed. Heat treated steel gears, ground running shafts and bronze bushed bearings. Operating levers are most convenient to operator.

*Our Illustrated Folder offers full description of
this high grade miller. May we send it?*

The American Milling Machine Co.
Cincinnati, Ohio, U. S. A.

It Reduces Milling Costs



**Built in
Very Liberal
Proportions**

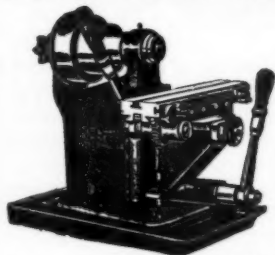
Willard 10' Universal Dividing Head

Centers swing 10" diameter. Clamping device is unusually rigid and runs true in every position. Spindle has No. 10 B. & S. taper, and is easily adjustable for wear. Three Index Plates allow indexing up to 100; a chart shows divisions obtainable up to 380. Made either right or left hand. Complete description on request.

THE WILLARD-MIDDLETOWN MACHINE CO., Cincinnati, O.

Successors to The Willard Press & Tool Co.

Just The Machine



for those light cuts on details for Fire-arms, Sewing Machines, Typewriters, Bicycles, Electrical work, and a thousand and one other details used in the manufacture of the various products of the manufacturing world.

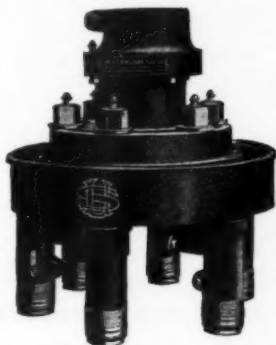
Send for descriptive circular

**The Carter & Hakes Machine Co.
West Winsted, Conn., U. S. A.**

AGENTS—for New England and New York, Hill, Clarke & Co.
WESTERN AGENTS—Marshall & Huschart Machinery Co.,
Chicago, St. Louis, Indianapolis.

U. S. Patent Adjustable Multiple Spindle Drill Heads

Unsurpassed on Big Drilling Lay-Outs



Spindle units
quickly attached,
or removed, to suit
the work in hand.

Fixed Spindle
Heads of any
practical type made
to order.

The conspicuous feature about the U. S. Multiple Spindle Drill Head is its **PATENTED** Double Adjustment of Spindles. Not only symmetrical lay-outs, but also holes in practically every conceivable line or formation—regular or irregular—can be easily and rapidly handled.

They are so rigid and powerful that the same speeds and feeds can be used with them as is employed for drilling a single hole. This means output is increased in direct ratio to number of units attached to head.

Nos. 1, 2, 3, and 3-A have from two to six spindles. Special Adjustable Heads built to order. No. 4 has four spindles, with single adjustment, for drilling evenly spaced holes in groups of four for pipe-fittings, flanges, etc.

Send for complete specifications and prices

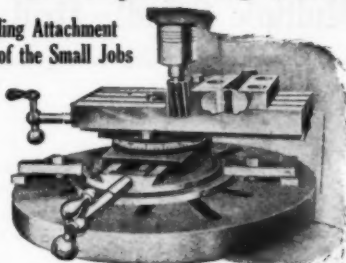
The United States Drill Head Co.

Cincinnati, Ohio, U. S. A.

Relieves and Replaces Big Millers

**Davis Milling Attachment
Does 90% of the Small Jobs**

**Converts
any Drill
Press from
14 to 42-in.
swing in
2 Minutes**



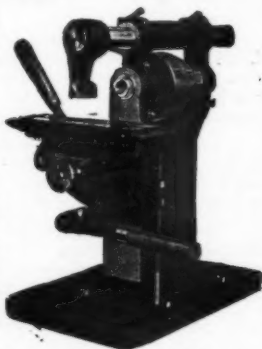
Relieves your large millers, comes in handy spotting castings, milling ends of bosses, etc., and does 90% of the lighter jobs as well as a \$1,000 machine; cuts keyseats perfectly. We also have low factory prices on our cylinder reamer for reboring the Ford car, and on our reliable air compressor. Write for the details.

Hinckley Machine Works, HINCKLEY, ILL.

This Hand Feed Miller \$155.

**Save Power—Save Room
Save Money**

That is what you do when you install Burke Milling Machines, as they take less power, need less factory space, and on account of the convenience in operation your small milling operations can be done much more rapidly than on a larger, heavier type machine.

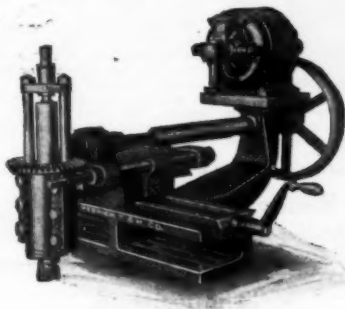


Write for Catalog, which also shows larger and smaller sizes.

**The Burke Machine Tool Co.
297 East 16th St., Conneaut, Ohio**

Without a Pedrick
Portable Milling Machine

**You Often Pay Its Price
In Delay On One Job**



To appreciate its value just add the savings you could effect in a year by taking this handy, ever-ready tool to the job instead of bringing the job to the tool, then subtract the price. Result—net earning power.

You need this Pedrick Miller to do those big jobs that your standard machines cannot handle.

Catalogue explains all its various operations—
a comprehensive book of reference and key
to manifold savings. Your copy is waiting—
shall we send it now?

Pedrick Tool & Machine Co.

Headquarters for Portable Machine Tools
Boring Bars, Crank Pin Turners, Pipe Benders, etc.

3644 N. Lawrence St.,

Philadelphia, Pa.

No Chance of Faulty Gears



**The
RED-
E**

The RED-E Milling Dog and Driver insures accurate spacing, since the ball sliding in grooved jaw compensates for the different angle in the driver at various positions of work. Dog cannot loosen, and there is no binding, cramping or lost motion. Not does it require adjustment for correct milling of odd pieces. It cuts gear teeth that are mechanically perfect.

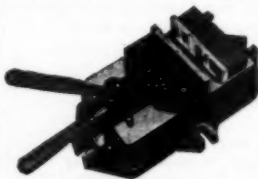
Send for complete Catalog No. 8 of RED-E Tools

The Ready Tool Co.

Bridgeport, Conn.



"The Hartford" Quick Acting Milling Vise



Rapid—Rugged

Jaw width.....5 in.
Jaw Depth.....1 1/4 in.
Weight.....40 lbs.
Maximum opening of Jaw
3 1/8 in.

It affords maximum dependability, efficiency and economy.

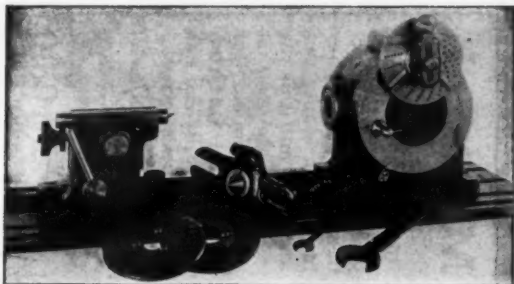
It stands up day after day under the heaviest, toughest strain of milling jobs. Has quick fire adjustment. Outlasts five ordinary vises. One firm after a try-out gave us a straight order for thirty-two more.

Write for full description

The Hartford Special Machinery Co.

285 Homestead Ave.,

Hartford, Conn.



Plain Index Centers Swing 10" Diam.

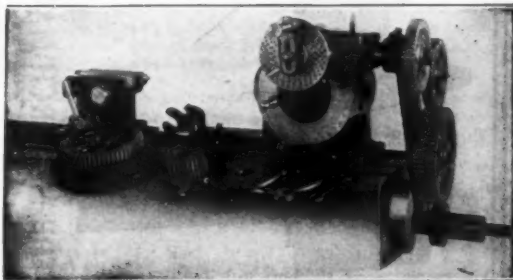
SIMMONS OF ALBANY

These Dividing Heads or Index Centers may be used on any milling machine; are well designed; materials are the finest obtainable.

The Universal Index with Spiral Cutting Attachment is a quite recent development and will be found remarkably useful in any tool-room. Let us tell you more about these accessories.

SIMMONS MACHINE CO., Inc., ALBANY, N. Y.

BRANCHES: 801 Singer Bldg., New York, 86-88 Exchange St., Buffalo, N. Y.
Albany and Buffalo Warehouses



Universal Index Centers with Spiral Cutting Attachments

Monarch Lathes

give universal satisfaction to the user. They have been doing this for years, and this accounts for the ever increasing demand for **Monarch Lathes.** Built in all styles and with any attachments desired.

Sizes 10 to 30-inch Swing

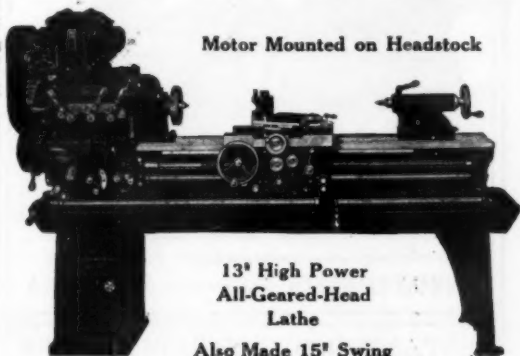
*Sold by a leading Machinery Dealer
in every machinery center.*



THE MONARCH MACHINE TOOL CO., 106 Oak St., SIDNEY, OHIO

Willard MATTMAN BRATTEN Lathe

(Double Back Geared—Quick Change)
Ideal For Tool Room Operations



Motor Mounted on Headstock

13" High Power
All-Geared-Head
Lathe

Also Made 15" Swing

The NEW WILLARD Tool Room Lathe is completely redesigned throughout and is offered as the latest modern all geared-head lathe, capable of the most economical, efficient and varied tool room production.

The headstock is a full box section, rigid and self-contained. All speed changes are selective inside the headstock. Chrome nickel steel gears, and hardened sliding gears. The gears in headstock run in oil.

It is impossible to throw in two speeds at the same time. Six direct speeds are available. Six further speeds are obtainable through the back gears, or a total of *Twelve Speeds*.

All shafts are equipped with SKF bearings.

*We build WILLARD LATHES in ALL STYLES
Ask about them—you'll be glad you did*

The Willard Machine Tool Co., Inc.
F Street, Box 784 - CINCINNATI, O., U. S. A.

"LEHMANN LATHES"

Three Step Cone—Double Back Geared and Geared Head—Single Pulley Drive or Arranged for Motor Drive



Five Sizes—14" to 24"

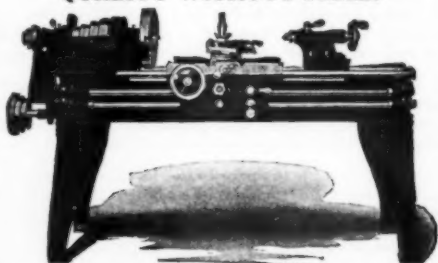
These are strictly high-grade engine lathes of superior design and thoroughly good workmanship and material. Built for accuracy and production.

Write for complete specifications and details. Do it today—NOW.

LEHMANN MACHINE CO., 3562 Chouteau Ave., ST. LOUIS, U.S.A.

"STANDARD" ENGINE LATHES

**14"—16"—18"—20" swing. Beds 6 to 16 ft.
"QUALITY WITHOUT FRILLS"**

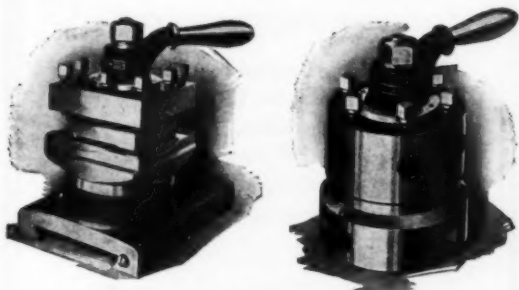


A moderate price lathe combining simplicity and accuracy with the highest grade of materials and workmanship. Suitable for repair shops, garages, manufacturing plants, etc. Send for descriptive circular and prices.

THE STANDARD LATHE WORKS

2951-61 Colerain Ave., CINCINNATI, OHIO, U. S. A.

If you have an Engine Lathe job that requires from 2 to 6 operations install a



McCROSKY TURRET

and you will be able to complete the job without stopping to change tools

The New No. 8 McCrosky Catalog will show you the style and size for your job.

Send for a copy today

McCrosky Tool Corporation
Meadville, Pa., U. S. A.

Branches and Agencies in all principal cities

Export Agents: Benjamin Whittaker Inc., 21 State St., New York



DAVIS MACHINE TOOL CO.

ROCHESTER, - - NEW YORK

MANUFACTURERS OF—

14—16" Close Coupled Tool Room Lathes.

12—14—16" Engine Lathes.

24"—Chucking Lathes.

14—16--20—24" Shapers.

3—4½—6" Cutting-off Machines.

No. 1—2 Keyseaters.

20" Drill.

Complete information upon request

"Economy" 14" Q. C. G. Lathe

With Geared Head
Arranged for Motor Drive



The cut illustrates an end view of the Lathe, showing motor application. The motor is mounted on detachable plate securely fastened to base cast integral with cabinet leg.

The "Economy" 14" Lathe has 12 spindle speeds, 32 changes of threads and feeds, bronze bearings, sight feed oilers—every feature strictly modern. Takes heavy cuts without vibration. For rapid production or accurate tool room work. Write for description and close price.

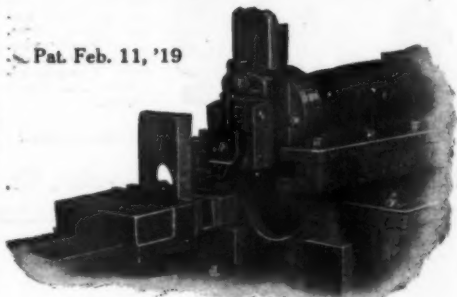
Rockford Lathe & Drill Co., Rockford,
Illinois

BRUNO

Slotting Attachment

for Shaper and Planer

Pat. Feb. 11, '19



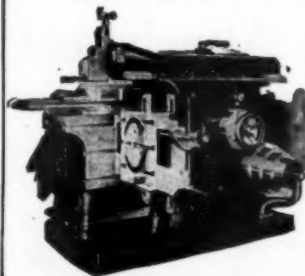
A cutting tool holder which converts your shaper into a Horizontal Slotter and makes possible the most intricate shaping such as is required for dies, jigs, gauges, keyways, slotting, etc.

Write for circular. Dept. H.

H. A. MOORE CO.
ROCHESTER, N. Y., U. S. A.

MILWAUKEE B. G. CRANK SHAPERS

Made in 9", 16", 20" and 24" Sizes



"MILWAUKEES" are a rare combination of simplicity, precision, and power. Positive stroke control and instant adjustment. Graduated tool head and vise swivel. Effective solid steel pinion friction locking device. Powerful back gearing. Massive and rigid column. Tilting top adjustable from 0 to 7 degrees.

Folder on request

MILWAUKEE SHAPER CO.,

Milwaukee, Wis.

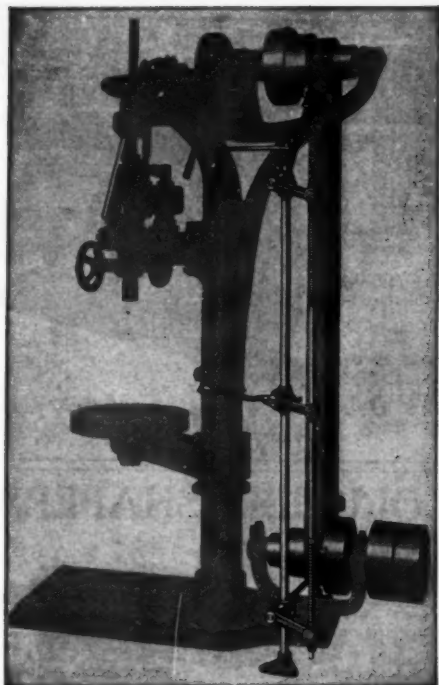
SHAPERS

12", 14", 16"
Plain Crank,
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through
Speed Box.

28" and 32"
Back Gear-
ed Crank,
Single Pul-
ley Drive.



The Smith & Mills Co. Station B.,
Cincinnati, O., U.S.A.



Instant changes of speed for
drill presses increase production
and reduce compensation to injured
employees.

Details in Circular H-D

The Kremer-Cummins Machine Company

1833-35 East 55th St., Cleveland, Ohio

Shapers

The best medium priced Shaper on the market.

Built in 16", 20", and 24" sizes, all back geared crank machines.

V-type ram.
Double face bull gear.

Ask us about them



The Osborne & Sexton Mchy. Co.
Columbus, Ohio

COLUMBIA SHAPERS

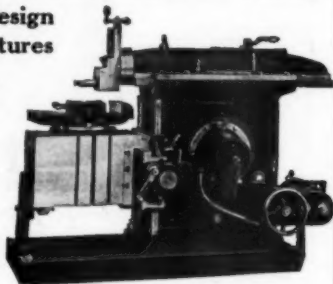
**Correct design
Latest features**

Highest grade construction.

A strictly
Quality
Proposition.

Compare the machines.

Buy a **MODERN**
Shaper



16", 20", 24", 28", 32"

The Columbia Machine Tool Company
Hamilton, Ohio

While They Last

We are offering



Capacity $1\frac{1}{4}$ "
Drills to
center of 20"

Automatic Feed
Hand Wheel and
Hand Lever Feeds

The Rockwell 20" Drill at \$150.00

f. o. b. cars Chicago

Limited Stock

Write Now

JOSEPH T. RYERSON & SON MACHINERY

CHICAGO

ST. LOUIS

DETROIT

BUFFALO

NEW YORK

COLLIS

JUST ANOTHER WAY OF SAYING

QUALITY—ACCURACY—SERVICE



No. 100-D Standard Type Sleeve



No. 100 Use-Em-Up Type Sleeve

STANDARD AND USE-EM-UP TYPES DRILL SLEEVES AND SOCKETS

CHUCK ARBORS

LATHE CENTERS

LATHE BUSHINGS

LATHE SOCKETS

HANDLED SOCKETS

DRILL DRIFTS

SQUARE TAPER SOCKETS

B & S TAPER SOCKETS

SPECIAL TOOLS

"WONDER" QUICK CHANGE DRILL CHUCK

Your Jobber Handles Collis Quality Tools

THE COLLIS COMPANY, MANUFACTURERS, CLINTON, IOWA



Barnes Drills

8 to 50' Swing

State size you are interested in and we will gladly quote. This is our 20-inch Drill with wheel and lever feed. Can furnish self feed and back also.

We have made over 22,000 of this size drill—is very popular and there is a reason—it's the best 20-inch drill made for the money.

We make this Adjustable Arbor Press

In three sizes

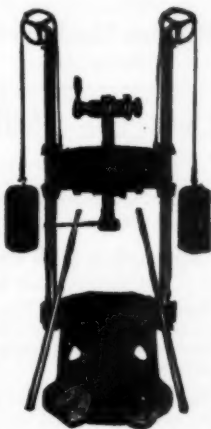
No. 1 size 12"x 24—\$100.00

No. 2 size 20 x 36— 175.00

No. 3 size 30 x 36— 200.00

* Means 12 inches between side screws.

Frankly, this is not a cheap Arbor Press, but is strongly made and most convenient to operate—just a lot better than others.



W. F. and John Barnes Co.
123 Ruby St., Rockford, Ill.

"Minster Junior"

An economy drill, because of its wide range and great productive capacity

For fast light drilling, and capable of heavy boring.

Has **six** speed and four feed changes, but **any** speed may be obtained by changing gears.

Tapping attachment, compound table and motor base if desired.

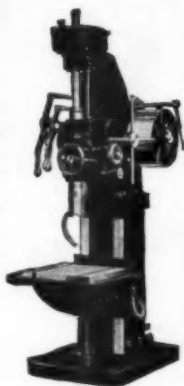
A drill you should know, on account of its wide scope of usefulness and low-cost production.

Just say "Send Bulletin 30"

MACHINE TOOL DEPT.

Minster Machine Co.

Minster, Ohio



Drill the "Milwaukee Way"

Every day you fail to get maximum results from your drill presses, you are burdening your work with unnecessary cost.

Milwaukee Drill Presses

28", 24", 21" and 14"

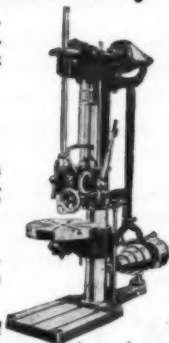
do it the "Milwaukee Way," which means the utmost in drilling economy—the result of "Milwaukee" construction.

The 24" press illustrated has sliding head, back gears, and positive feed with six changes.

Complete information gladly furnished

RICHARDS MACHINE CO.,

**3417-23 Vliet Street,
MILWAUKEE, WIS.**



Why this all-purpose radial costs less



Our Radial Drill No. 50 is the same type as this No. 51 but has lever feed only.

C-O Self Feed Radial Drill No. 51

*Furnished with 2½
or 3½ foot arm*

This Model No. 51 has four instantaneous feed changes, self-oiling bearings, automatic cut-off and quick return lever on spindle—capacity for drilling up to 1½ inches and 2½ or 3½ foot arm.

HERE is a radial drill with an enormous range of drilling uses and with a great saving in parts, so that it affords you all that is desirable in a radial drill at a lower cost.

Notice that this No. 51 Canedy-Otto Radial attaches to shop wall or to post; that we have eliminated the cost of heavy shaft and base; that it puts your walls or posts to work for you and that it will do practically everything you need done in the way of drilling, from 1½ inches down.

Canedy - Otto POST RADIAL DRILLS

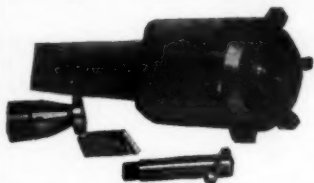
For Shops That NEED a Radial at a Lower Cost

THIS drill is the answer to the problem of shops which absolutely NEED a radial but have found it too heavy an expense. It is strong, simple, compact and made of best material by means of best workmanship. All bearings are hydraulically pressed graphite cones, increasing life of babbitted bearings 300% to 400%.

You cannot make a better investment than this

Canedy-Otto Manufacturing Company
General Offices and factory—Chicago Heights, Ill.
New York Office—Grand Central Palace

A New Madison Tool for Both Rough and Finished Boring



**Madison
Adjustable
Boring Bar**

For any kind of
boring where
cored holes are
to be machined.

This handy Boring Tool is ruggedly built and backed by solid metal. One turn of graduated screw increases cutter diameter. 0.25".

Especially useful in automobile shops for boring cylinders. Can be made with a piloted bar for work requiring it.

You'll like this new tool. Shall we describe and quote?

MADISON MANUFACTURING CO., - Muskegon, Mich.

A Better Portable Drill or Grinder



$\frac{1}{2}$ " Size

If it isn't better, don't buy it, but let us tell you why the **WODACK** Electric Drill or Grinder is better, and then judge for yourself. An analysis of its design and construction showing the reasons for its superiority will be sent you on request, wholly without cost or obligation. A year's satisfaction is our guaranty.

Don't wait; write today

Wodack Electric Tool Corporation
31 South Jefferson St., Chicago, Ill.



20' Swing

"Speaking of Operations—"

(Ten good reasons why you should specify it.)

Reason No. 3

TWO MACHINES FOR THE PRICE OF ONE

Perhaps ninety per cent of the drilling operations of a twenty inch upright are such that perfect accuracy is not absolutely essential.

But that other ten per cent **MUST** be perfectly accurate.

For the ten per cent you buy a specially constructed **HIGH PRICED** machine which probably stands idle more than it is used.



NO WONDER

the other fellow can beat your costs for he has equipped his shop with a

Frontier Super-Drill

and does both classes of operations on the same machine.

He not only reduces production costs, cuts overhead and increases production, but he gets out **BETTER WORK** because the holes he drills are

100%

accurate instead of only

10%

That **BACK COLUMN** is the reason why.

Catalogue on request

Frontier Machine Tool Co., Inc.

130 Lakeview Ave.,

BUFFALO, N. Y., U. S. A.

A Big Economizer

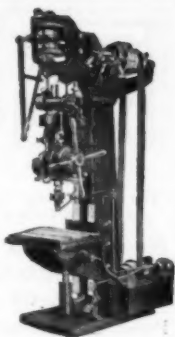
On Duplicate Work

It drills, taps, reams, counterbores, etc., at one setting of the work, saving time and insuring accuracy. The—

Turner Turret

is to the drill press what the turret lathe is to the common lathe. Made with 4 to 12 spindles, or to order. Send sketch of your work for cost estimate.

Full data in Bulletin FH
The "Quint" Turret in Bulletin QH



Turner Machine Company
DANBURY, CONN.

Bench Drill

$\frac{1}{2}$ -in. Capacity



An "A-1" Tool

Francis Reed Co.
Worcester, Mass.

Model "E-50"

Sensitive Bench Drill Press

This 2-speed, direct motor drive, high-speed ball bearing drill is especially designed to care for all work, ranging from the smallest to a $\frac{1}{4}$ " hole.

Standard speeds 2,100 and 6,000 R. P. M.

Main spindle is heat treated and ground to size; it is guided through a quill with support at each end in an annular ball bearing.

End thrust is taken up by an end thrust ball bearing under feed arm.

A quick adjustable table has a working surface $5\frac{1}{2}$ " x 5", and will take work up to $4\frac{3}{8}$ " in height.

Surface of table is ground to insure accuracy.

Table has a self-cleaning taper, which keeps the precisely ground main column free from chips, and serves also as a guard to prevent injury to column.

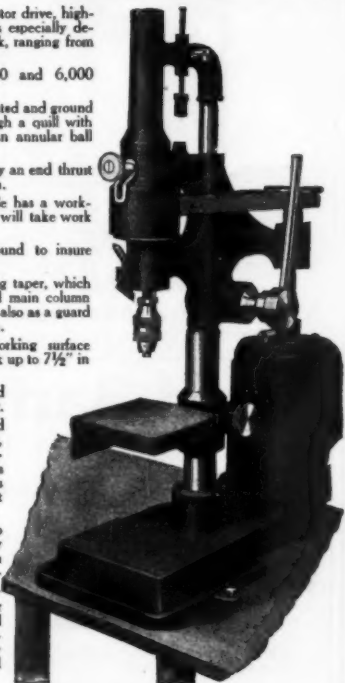
Base has a ground working surface 4" x 6", and will take work up to $7\frac{1}{2}$ " in height.

Base has oil groove and self-cleaning column support.

Your attention is called to another special feature, which is a spindle lock enabling quick changes of drills without the operator's hands coming in contact with belt or pulleys.

An idler pulley takes up any belt stretch which may occur in the endless woven canvas belt, without impairing sensitiveness of machine.

Front pulley and upper part of spindle are guarded by a semi-tubular guard insuring safety. Machine may be operated either by hand or foot control.

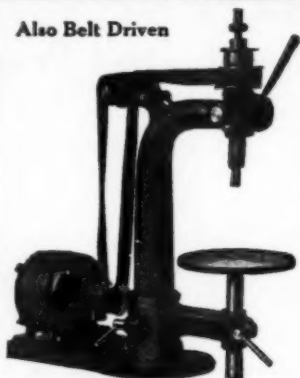


Height over all.....24"
Base..... $7\frac{1}{2}$ " x 18"
Diameter of spindle..... $\frac{7}{16}$ "

Spindle feed..... $\frac{2}{4}$ "
Weight.....62 lbs.
Will drill to center of a 6" circle.

The High Speed Hammer Co., Inc.
Dept. 14
Rochester, N. Y.

Also Belt Driven



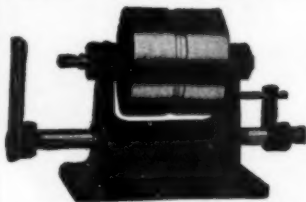
**Burke 10"
Bench Drill
Motor Driven**

Extremely accurate, very sensitive and of *Burke Quality*. Has double flanged top cone mounted on large bearing through which spindle runs. Spindle thrust taken on a ball bearing.

Worth more than it costs. Write for full information

The Burke Machine Tool Co.
297 East 16th St., Conneaut, Ohio

Send Samples



**or Drawings
of your Tapping
Jobs and let
us give you
Production
Estimate**

Burke Friction Driven Tapping Machines eliminate all shock to the tap, and for this reason stop 95% of your tap breakage.

Look into your scrap bin and figure up your losses in broken taps and imperfectly tapped work and see what you can save by installing Burke Equipment.

The Burke Machine Tool Co.
297 East 16th St., Conneaut, Ohio



Watch The Corners
Dollars Saved—Dollars Made

Squeeze Your \$ Of Cost

Get An *Avey* Get all the Profit

Drive To The Limit
Double Production—Half the Labor

The Avey Drilling Machine Co.
Cincinnati, Ohio

E-Z-SET Boring Tool



Use it in the tailstock of the lathe while the tool in the carriage is doing a turning operation.

Use it in the drill press; in the screw machine.

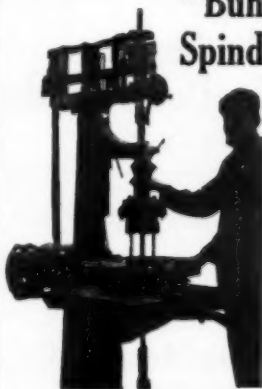
Wherever used it will save you time and money.

4 sizes. Straight or taper shank.

Write for circular and price list

THE
B. & W. Tool & Die Co.
 102 St. Clair Ave., N. W.
 CLEVELAND, O.

"Buhr" Multiple Spindle Drill Heads



The picture shows a "Buhr" drilling six bolt holes in wood wheels at high speed. It has run five years with only one replacement of ball bearings.

We make Fixed Center Drill Heads of all descriptions, both bronze and ball bearing.

Nelson-Blanch
Manufacturing Co.
 Detroit, Mich.

New York Office:
 Grand Central Palace

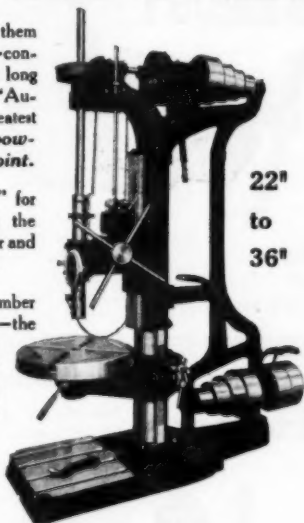
Experts Confirm Our Claims

Users—and among them are many experts—confirm our claim of long standing that the "Aurora" has the greatest pulling capacity, or *power at the drill point*.

The "reason why" for this superiority is the large pulley diameter and the ratio of gearing.

There are also a number of special features—the money saving kind—that are especially interesting during these days of readjustment.

For extraordinary drill value consult our Catalog today



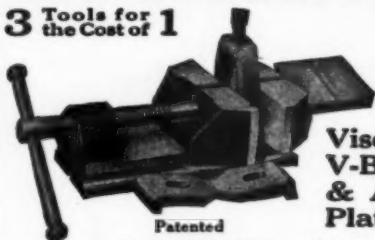
DRILLING TESTS OF 24" AND 26" DRILL

Size of Hole	Spindle Speed	Feed per Minute	MATERIAL
1"	360	9½"	Cast Iron
1"	360	6½"	Mild Steel
1½"	350	6½"	Mild Steel
1½"	350	9"	Cast Iron
1½"	225	5½"	Mild Steel
2"	225	6½"	Cast Iron

The Aurora Tool Works
Aurora, Indiana, U. S. A.

G-S Combination Vise

3 Tools for 1
the Cost of 1



Patented

*Saves
time.
Makes
accurate
work
easy.*

**Vise
V-Blocks
& Angle
Plate**

**Takes the
place of
costly jigs**

No. 1.....	Dimensions.....	No. 2
5"	Jaws Open.....	7"
2 1/2"	Depth of Jaws.....	3"
8"	Width of Jaws.....	9 1/2"
1 1/2"	Jaws Overhang.....	2"
65 lbs.	Weight.....	105 lbs.

*Sent on
30 days'
trial.
Write for
literature*

GERMANOW-SIMON MACHINE WORKS

68 Mill St.
ROCHESTER, N. Y.

Hollands Machinists' and Woodworkers' Vises

Good for 33 years



And better now than ever

HOLLANDS VISES are made with solid or swivel jaw and stationary or swivel base, and each is a leader in its class. Machinists' Vises, Filers' Vises, Woodworkers' Vises—what do you need? Write for latest price list.

Hollands Tool Co.,

(Established
in 1887)

Erie, Pa.



THE SIPP QUICK - CHANGE - SPEED SENSITIVE DRILL PRESS IS DIFFERENT

Speed can be changed in two seconds.
Belt troubles are eliminated.
You get highest belt efficiency.
Belts can be changed in ten seconds.
It is extremely rigid.
It is very sensitive.
The spindle always runs in perfect balance.
It is a Safety First drill.
Let us tell you more about it.

The Sipp Machine Company
Keen Street, PATERSON, N. J.



Style "C"



The Hinge



Style "Y"



Style "B"



Style "G"



Style "O"



Style "L"



Style "T"

GITS OIL CUPS

Give perfect satisfaction where others fail. State style and size in which you are interested, and we will send free samples and catalog.

GITS BROS. MFG. CO
1940 SO. KILBOURN AVE., CHICAGO



Style "H"

Style D.



Opened.

Tucker Oil Hole Covers

For twenty-one years the standard of quality, utility and finish. A style and size to meet every requirement. Catalogue No. 6 contains full information.

Style G.



Opened.

Style A.



Style B.



Style C.



Style D.



Style E.



Style F,
Drive.



Style G.



W. C. & F. C. TUCKER, Hartford, Conn., U.S.A.

FOREIGN AGENTS: Fenwick Freres & Co., Paris, France
Alfred Herbert, Ltd., Yokohama, Japan

It's
A
Leader

MUELLER RADIAL DRILL



Mr. Drill User:—

The construction of the gear box on the MUELLER radial drill is remarkably simple. The component parts of it are few in number, but powerful enough to withstand the severest strains without showing the slightest signs of wear. Changes of speed can be instantly made without shock or noise. Superior lubricating facilities are obtained.

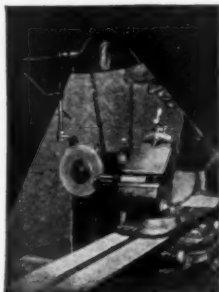
There is a reason why everyone boosts the MUELLER radial. Ask us to tell you.

The Mueller Machine Tool Company

Radial Drills and Lathes

ESTABLISHED 1902

CINCINNATI, O.



SAVE spoiled work due to poorlighting; Save half the current; Save eye strain; Save Lamp Breakage.

Increase output by having a good light directly on the work; on the thread you are cutting; in the hole you are boring; right at the spot you are working. Instantly adjustable; stays where it is put.

We will send one of these lamps to any plant or factory on approval.

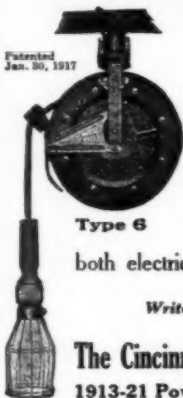
Send for our literature on machine shop specialties.

We make Money Savers.

The Will-Burt Company

Orrville, Ohio

Patented
Jan. 30, 1917



Type 6

"Autex" Extension Reel

Rapidly finding a place in the largest industrial plants, machine shops, service stations, etc., in the U. S. Used for both electric lamp and power extensions.

Write for descriptive circular

The Cincinnati Specialty Mfg. Co., Inc.

1913-21 Powers St.,

Cincinnati, Ohio

Mummert-Dixon Facing Heads



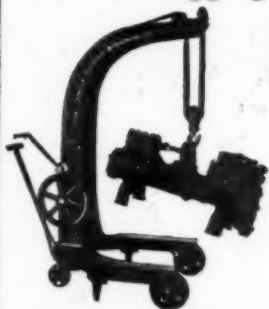
Here is a man facing bosses on a large frame and drilling the holes with only one setting of the work. Perfectly simple and easy with a Mummert-Dixon head; a difficult and costly job without it.

This is only one of many applications of this head, which is a time saver and a trouble reducer, wherever it is used. They attach to milling machines, lathes, drill presses, boring machines—anything with a spindle or that can drive a bar. The cutting tool they carry—an ordinary lathe tool—is automatically fed across the face of the head, either in or out, the operation being practically the same as facing on a lathe. It combines accuracy with speed, facility of adjustment with a wide adaptation. For spot facing or any work of that nature, it is without an equal for economy.

Let us show you some of the many ways it can be used to save money.

MUMMERT-DIXON CO., HANOVER, PA.

Does the Lugging of Many Men



Indispensable wherever heavy work is moved. The small shop can hardly do without it, and in the larger ones it is a busy and useful auxiliary. The

Canton Portable Crane, Hoist and Truck

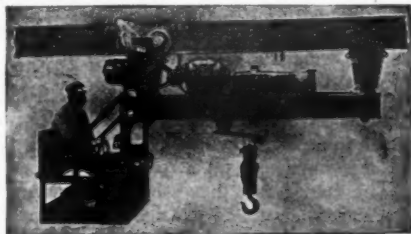
increases production out of all proportion to its cost, by saving much heavy labor and expediting work.

*Many sizes. Write
for Booklet E-8*

Canton Foundry and Machine Co.

Canton, Ohio

New York Office: 45 West 18th Street, Second Floor



Euclid Hoists

can be made a big factor in reducing your costs by speeding up material moving and cutting the pay roll.

Write for catalogue today

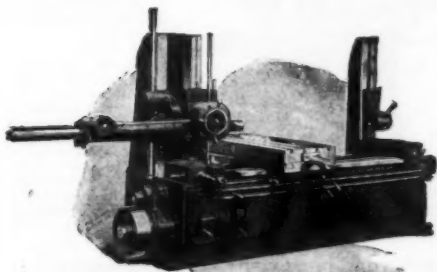
The Euclid Crane & Hoist Co.

EUCLID,

OHIO

Bound to make good

The "LAMBERT" embodies unusual efficiency and high quality throughout



A Horizontal Boring, Milling and Drilling Machine that's as Complete and Accurate as Human Skill and Ingenuity can make it

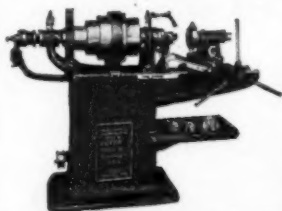
The remarkable simplicity, convenience and precision of this up-to-the-minute tool assures you of a worth-while economy and profit every day it is used. It has two adjustable start-and-stop levers which slide along the horizontal bars—one starts, stops or reverses any feed, and the other starts or stops the bar. Also bronze bushings and all-steel gearing. Spindle head enables both facing and boring to be done at the same time. Verniers furnished for table cross feed on request.

The specifications show why it's a money-maker

Carroll Foundry & Machine Tool Co.
Bucyrus, Ohio, U. S. A.

Victor Nut Facing Machine

For Rapid Facing True to Thread



Speed—The average operator faces 10 to 12 $\frac{1}{4}$ " to $\frac{3}{4}$ " nuts a minute; larger ones in proportion.

True to Thread—Facing true to thread is insured by facing nuts on a hardened threaded mandrel.

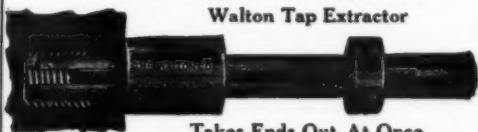
Substantial—Seldom, if ever, needs repairs. No parts ex-

posed to wear except high-speed steel cutters, which have only to be ground for proper clearance, and are cheaply replaced when worn down. Made in two sizes. Arranged for motor drive if desired. Write for complete description.

VICTOR TOOL COMPANY, - WAYNESBORO, PA.

Why Waste Expensive Time Over Broken Taps?

Walton Tap Extractor



Takes Ends Out At Once

When a tap breaks the WALTON PATENTED TAP EXTRACTOR cuts out all needless waste of high-priced labor in taking out the broken end by ordinary rule-of-thumb methods. Instead, you merely insert the prongs of this tool into flutes of broken end and one or two twists extracts the piece—easily and quickly. *Here's a real dollar saver.*

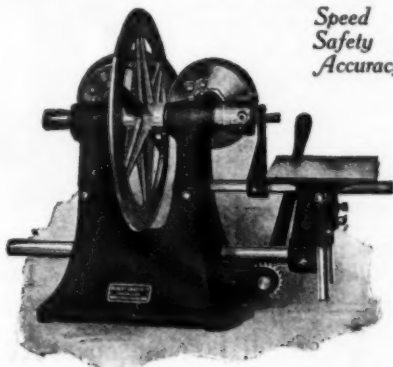
You may have one on approval. Your address?

THE WALTON CO., Hartford, Conn.

—the peak of production?

It's easy with the rapid friction driven
Rickert-Shafer Tapping Machines

*Speed
Safety
Accuracy*



MANUFACTURERS:—If you are interested in maximum production, this is the machine for you. The friction drive insures a smooth-running chuck spindle, and practically eliminates all tap breakage. Ordinary labor or even a handy boy will successfully operate this machine. They can tap *eighty* $\frac{1}{2}$ " holes, $\frac{9}{16}$ " deep, *every hour!*

The picture shows our $\frac{3}{8}$ " machine. We also make $\frac{3}{16}$ " and $\frac{5}{16}$ " sizes, bench or floor type. Can be direct connected to motor. Our verticals are made $\frac{1}{4}$ " and $\frac{1}{2}$ ", floor type only. Our radials are made $\frac{3}{8}$ ", and enable you to effect a considerable saving in the handling of auto and machine tool parts.

You will like our Tapping Machine Bulletin—send for a copy

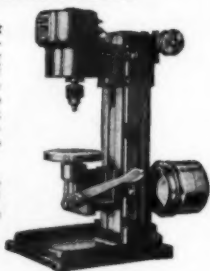
RICKERT-SHAFER CO., 1110 Cherry Street, **ERIE, PA.**

"B-T" Vertical Tapping Machine Improved. Friction Drive

Specially designed for tapping sheet metal and cast parts of unusual shape, affording thereby greater speed and accuracy of output. The double angle cone friction enables operator to tap to bottom of blind holes without risk of breaking tap. It is simple, sensitive, productive. Capacity, 0 to $3/16"$ taps.

Also *Plain Horizontal Tapper* in two sizes. Capacity, 0 to $3/16"$ and $3/16"$ to $3/8"$. High-grade machines. Close price.

Specifications on request



Bicknell-Thomas Company
90 Wells Street, Greenfield, Mass.

It Is Foolishness To Continue Breaking Taps

The most difficult work—including tapping tough metals, blind tapping, and bottom tapping in shallow holes, where a stop on a machine is useless—can be done in absolute safety to taps and work by using a

Woodstock Improved No-Tap-Breakage Chuck

It automatically releases tap the minute it binds or strikes bottom. Tap breakage is thus positively eliminated, saving material, time and money. Uses standard taps. Made in five sizes.

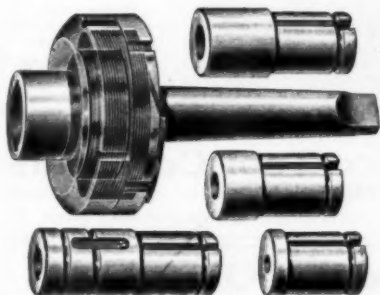
Glad to send one on trial

Peter Bros. Manufacturing Co.
115 Railroad St., Algonquin, Ill.



THE SAFETY FRICTION DRIVEN DRILL and TAP HOLDER

Cuts Out Tap Breakage



Tap breakage is eliminated because spindle instantly revolves under undue strain. "The Safety" permits tapping to the bottom.

Simply designed and easily operated. It enables you to change from drill to tap, or tap to drill, without stopping spindles. This prevents "lost motion" in changing from drilling to tapping. There is nothing about it to break or get out of order. Made in four sizes—0 to 2½" diameter.

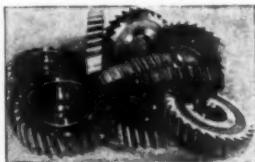
Let it make a big cut in the high cost of your tap breakage.

We solicit a trial order

THE BEAMAN & SMITH CO.
PROVIDENCE, RHODE ISLAND

Elco Quality Tools—

We manufacture and carry a large stock of the following "Quality" Cutting Tools:—



Plain and Side Mills
Inserted Blade Cutters
Interlocking Cutters
Angular Cutters
Special Heavy Duty Under-cut Tooth Mills
End Mills, Reamers, Keyway Cutters and Slitting Saws

May we quote on your next order?

Elco Tool Corporation

720-730 Sixth St.,

Rockford, Ill.

Specialists in Tools, Dies and Fixtures

Extract Oil

FROM YOUR CHIPS, SHAVINGS AND WASTE



No. 400—Capacity: 2 Bushels

The Curtis Ball Bearing Oil Extractor is built to make money by saving oil that otherwise would be wasted. In a few months' time the cost price is returned and then the saving is practically net profit.

It's a method of modern economy that should be in operation in *your* shop. Made in three sizes.

Buy a Curtis now and you'll buy less oil for many years thereafter. Don't delay your investigation.

Albert B. Curtis Estate

Box 44

--

--

Worcester, Mass.

MOBACK

Inserted Blade Adjustable Expansion Reamers



produce smooth true holes
at minimum cost per hole

Outstanding features —

- 1—Removable blades, allowing replacement to be made at a fraction of the cost of a new tool.
- 2—Simple and efficient method of adjustment, no screws, pins or shims employed in holding the blades.
- 3—Maximum adjustment with minimum amount of blade travel.
- 4—Blades supported entire length.
- 5—Bodies solid, made in one piece.
- 6—Rear binding nut accurately graduated for guide in setting reamer to size.

Circular gives detailed description

Moback Tool & Machine Mfg. Corp.
330 Atlantic Ave., **BOSTON, MASS.**

**Do you have any jobs which
require pressure?**



Why not install the most practical kind of a press for work requiring pressure—a **Lourie Hydraulic Press**. We manufacture both hand and power presses for any kind of a job which requires pressure.

Write for Catalog

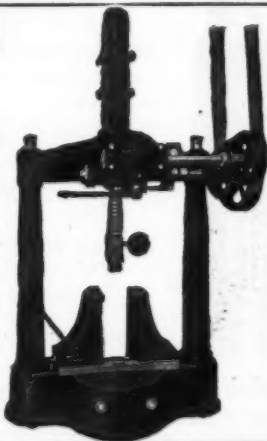
LOURIE MFG. CO., Springfield, Ill.

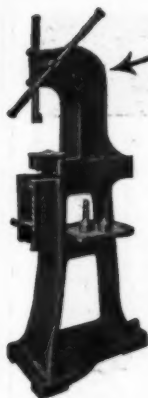
ATLAS 30 Ton Power Press

will give you
greatest possible
efficiency on your
production work.

*ATLAS Presses are built
in all sizes and types.*

Atlas Press Co.
Kalamazoo, Mich., U.S.A.





**See that
strengthening
rib!**

Nicholson Arbor Presses are built to endure the hardest sort of machine shop service. Frames of best semi-steel, racks, pinions and levers of heat-treated chrome-nickel steel—sturdy and compact—they last for years. Made in five sizes, and of course they're useful for many other sorts of work besides pressing out arbors.

Nicholson Expanding Mandrels

Just nine of them to a set—and they instantly fit *any* hole, round or square, from $\frac{1}{2}$ " to 7". If you're using solid mandrels now, you can figure for yourself the saving in time, labor, and storage space a set of these would effect in your shop.

*Details and prices of these and other
Nicholson products on request.*



W. H. Nicholson & Co.

117 Oregon St.,

Wilkes-Barre, Pa.

Agencies:

BURTON, GRIFFITH & CO., Ltd.
Ludgate Square, London, E. C.

MONTI & OSCURO
Milano, Italy

BURTON FILS
68 Rue des Marais,
Paris, France

ANDREWS-GEORGE CO.
16 Takegawa-Cho, Kiobashi-Ku
Tokyo, Japan



"Wear-Ever" Woodruff Chuck And Keyway Cutter

The "Wear-Ever" Woodruff Keyway Chuck insures a positive drive and true-running cutter. Eliminates making collet chucks. Fits all standard makes of milling machines, and is made in all tapers, such as Brown & Sharpe and Jarno tapers.

Let us supply you with cutters
No extra charge for the square



**SCULLY-JONES & COMPANY, 555 Railway Exchange Bldg.,
CHICAGO, ILL.**

Your foreman and master mechanic will be interested in The Broach Well Keyway Set

Used under an arbor press, these tools will cut smooth, accurate keyways, cheaply and quickly.



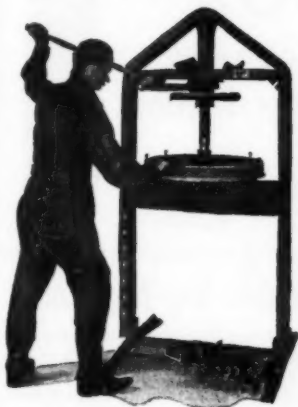
Patent Pending

*An illustrated circular descriptive of the tool
and its uses mailed on request.*

**Velco Manufacturing Company, Inc.
Greenfield, Mass.**

WEAVER

Forcing Presses



are saving time
and money and
improving the
quality of work
in thousands of

**Garages
Electric
Shops
Machine
Shops
and
Factories**

because of their wide range of application to both
bulky and small work, due to their

**Great Depth Adjustment
Quick Release Feature
and Enormous Leverage**

enabling the operator to exert a pressure of 28 tons
without assistance. For complete description and
prices, write for catalogue.

WEAVER MFG. CO.

HARVARD PARK,

SPRINGFIELD, ILLINOIS

100%

Write for Catalog O on this
Keyseating Miller

National Machine Tool Co.

2268 Spring Grove Ave.,

Cincinnati, O.



A Strong Portable Key-Way Cutter

This handy little tool is easily taken right to the job where it cuts key-ways of just exactly the right dimensions. It does the work quickly, accurately and at minimum cost, saving labor and money. Just clamp the tool to the shaft and turn the crank.



New Style "B"

Style "B" has six milling cutters and cuts keyways from $\frac{1}{4}$ " to 2" wide, in shafting 2" to 8" in diam. and 12" long without resetting.

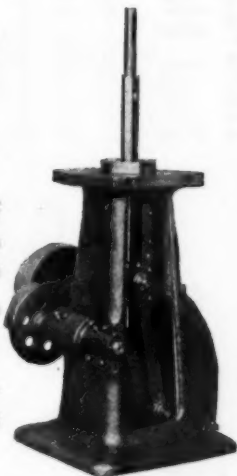
THE BUCHER-SMITH CO.
East Liverpool, Ohio

The Catlin—The Simplest Keyseater in the World

**Accurate Keyseating
Cheaper Keyseating
Faster Keyseating
Greatest Durability
Simplest Operation**

**Has less than half
the number of parts
of other keyseaters
Sizes for all classes
of work.**

**For direct-connect-
ed motor or belt
drive.**



The illustration shows the No. 1 Catlin, belt driven, with three-step cone pulley. Other sizes, for belt or motor drive, cover practically all keyseating requirements.

In ordinary shop practice, without any attempt to establish records, the "Catlin" cut in 20 minutes keyseats $2\frac{1}{2}$ " long, $\frac{1}{2}$ " wide and $\frac{1}{4}$ " deep in 20 mitre gears of 8" diam.; in 3 minutes, a keyseat 6" long, 1" wide and $7/16$ " deep in a cast steel hub. These are merely examples of its productiveness under ordinary shop conditions.

Full information cheerfully furnished; will you write?

**Chattanooga Machinery Company
Chattanooga, Tenn.**

“Hold-Em-All” Tool Holders

Holds any shape stock.

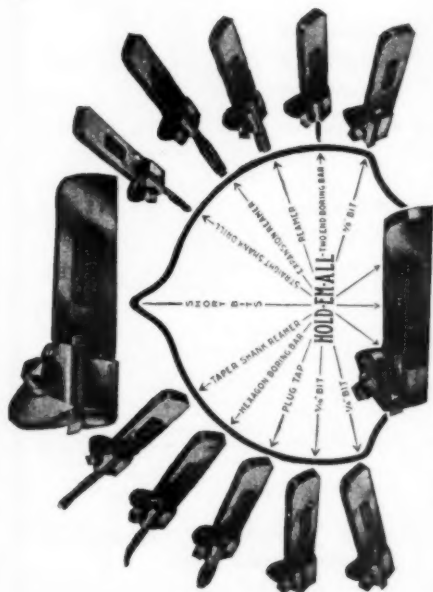
Holds short bits.

Combines many in one.

Made R and L hand,
Off-set and S shanks,
and conform to all types
of other makes.

Write for Catalog

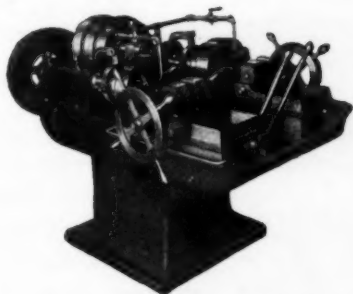
Albany, N. Y.



SIMMONS ECONOMY TOOL CORP.,

CONSULT YOUR SUPPLY HOUSE

Murchey Double Head Semi-Automatic Nipple And Pipe Threader



**Cuts 3,500 Standard 1" Threads
or 1,800 Nipples in 10 Hours**

Reams and threads in one operation. Cuts from a close nipple to full length of pipe. Requires no attention after pipe is started into die. Murchey Self-Opening Die Heads insure quick, positive, universal adjustment—true, accurate, uniform threads. Made in sizes to cut $\frac{1}{8}$ " to 2" pipe.

Write for Catalog and close prices

Murchey Machine & Tool Co.

850 Porter Street, Detroit, Mich.

NEW YORK OFFICE	.	.	.	.	99 Warren Street
CLEVELAND OFFICE	.	.	.	.	1625 Williamson Bldg.
PITTSBURGH Representatives,	.	.	.	Laughlin & Barney,	483 Union Arcade
CHICAGO Representatives,	.	.	.	R. E. Ellis Engineering Co.,	621 Washington Blvd.
LOS ANGELES Representatives,	.	.	.	Harron, Richard & McCone,	225 So. San Pedro St.
Costs Machine Tool Company,	.	.	.	14 Palmer St., Westminster,	London, S.W., England
Fenwick Freres & Company,	.	.	.	.	8 Rue de Rocroy, Paris



Straight Shank Turning Tool



Boring Tool



Straight Shank Cut-off Tool

Armstrong Tool Holders

Make One Pound
of High Speed Steel
go as far as Ten
Pounds in Forged
Tools.

Grand Prize Winners at
Panama-Pacific Exposition.

Complete Catalog Free.



Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.

Cleveland National Spring Tool Holder



No. 6, Shank Size $\frac{1}{2} \times 1\frac{1}{2} \times 6$ \$15.00

No. 7, Shank Size $\frac{3}{4} \times 1\frac{1}{2} \times 7$ \$18.75

For
Broaching,
Cut-off,
Forms,
Gauges,
Keyways,
Radius,
Taps,
Worm or
Square
Threading,
Etc.



Write for
30 days'
trial offer

ALSO
Circulars
of other
Modern
Tool Room
Specialties

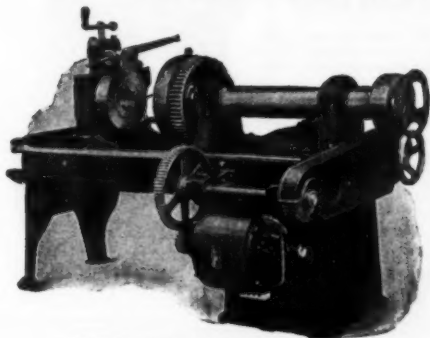
The Cleveland National Machine Co.

Dept. T. L.,

Cleveland, Ohio

Big Quantities—

Or any odd job of pipe-threading
done at lowest cost on B. & Ks.



(No. 3 Peerless. All Gears are Covered.)

B & K. PIPE MACHINES are so convenient and so adaptable—changes are made so easily and so accurately—that they are by far the best for all jobs—big or little.

A gear box drive enables the operator always to have the right threading speed. You get instant adjustment to the 1000th of an inch without the use of tools. Dies can be changed without removing a screw. There are 17 styles and sizes of machines from which to make a selection for your exact needs.

There are many more features of excellence with which we shall be glad to acquaint you—features that mean top-notch efficiency and rock-bottom costs.

Asking for information does not obligate you in any way

Bignall & Keeler Machine Works
Edwardsville, Illinois

**Weigel
Single-Wheel
"Kwality Kaster"**

Will not crush or break. Swivels on steel machined rollers. The best single caster on the market.

**Double-Wheel
"Trukaster"**

Lasts three times as long as others. Easiest running, strongest, and most durable double-wheel caster made. Has heavy plates and axes.

Write for Price List

**THE HAMILTON
CASTER & MFG. CO.
HAMILTON, OHIO**

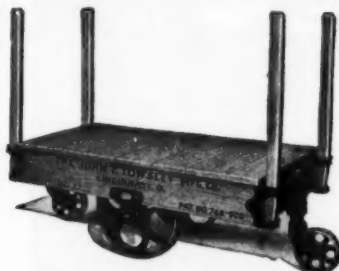


Hitchcock's List

**Goes to the Heart of 96% of
the Best Plants in the Country**

The above statement is the result of careful mail inquiries directed to thousands of the larger tool-using concerns.

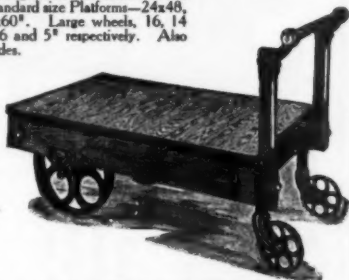
Towsley Quality Trucks



Nos. 27, 28 and 29 FOUR-WHEEL TRUCKS

"Regular" style with tilt, large wheels in center and one swivel at each end. Standard size Platforms—24x48, 30x48, 24x60 and 30x60". Large wheels, 16, 14 and 12". Swivels, 7, 6 and 5" respectively. Also furnished with posts on sides.

The month and year of shipment stamped on both sides of Towsley Trucks show how long they last—and their record is unequalled. They are their own best advertisement.



No. 13 STYLE FOUR-WHEEL TRUCK.

Furnished in same sizes and with same running gear as used on Nos. 27, 28 and 29 Truck

We have the Trucks you want of the quality you need, and cordially invite you to get in touch with us

John T. Towsley Mfg. Co.

1036 Woodrow St.,

CINCINNATI, O.

Wood-Working Machines—Gluing Appliances—Factory Trucks

Whitney Cylinder Grinder

For grinding all kinds of Gasoline Engine Cylinders as well as work too large or too heavy to revolve.

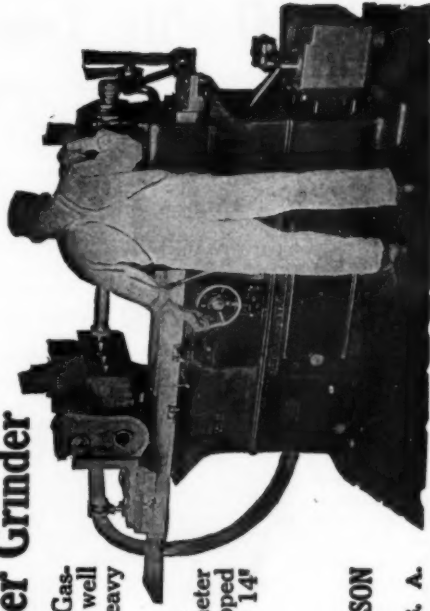
Machines furnished to grind holes from 3" up to 7" diameter and 14" deep. Also equipped to grind holes as large as 14" diameter and 20" deep.

Write for new catalog

BAXTER D. WHITNEY & SON

Incorporated

WINCHENDON, MASS., U. S. A.



Two Great Cost Reducers

Manhattan Massive Surface Grinder



Compact, yet so rugged and rigid that it has no chatter whatever. Body casting affords most clearance where it is most required. Graduated dials on vertical and transverse feeds are graduated in thousandths of an inch. Spindle without overhang at wheel, end runs in extra large phosphor bronze bearings, insuring increased capacity for heavy cuts. It is *silent, precise and powerful.*

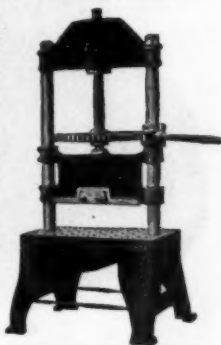
Hand Screw Press for Die Makers

Unlike ordinary punch power presses which require two or more men to handle them in die making operations, this MANHATTAN is a *strictly one-man machine.*

It also insures perfect alignment of punch and die, which cannot be always obtained with a punch press costing *ten times as much.*

Unsurpassed for rapid and accurate die making.

Guaranteed up to 80,000 lbs. pressure.



Send for full description of these economy machines

Manhattan Machine & Tool Works
Dept. A., Grand Rapids, Mich.

GRIND IT On a BLOUNT

20" Wet Tool Grinder



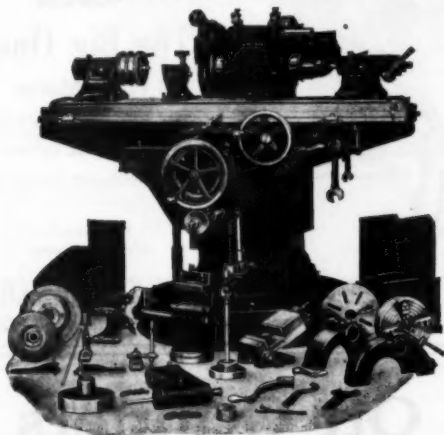
Catalog on request

Blount Wet Tool Grinders are built in three sizes for 14", 20" and 30" Grinding Wheels respectively.

J. G. BLOUNT CO., Everett 49, Mass.

Grind—and Save Money

All your grinding done easily and quickly
on the Thompson 10x36 Universal Grinder



ROCK-BOTTOM Grinding Economy is yours with this up-to-date, versatile machine. It takes care of any and all grinding that may come up in a modern machine shop. The grinding wheel is in a fixed position, while the table is adjustable to any position relative to the wheel. It does plain grinding for straight or taper work between centers, and also surface, edge, die, cutter or internal grinding. It is the very embodiment of convenience, speed and dependable accuracy—and that's why it saves money.

Let us mail you the specifications, or see one of

OUR SELLING REPRESENTATIVES:—

Metz & Merryweather Mch. Co.
Cleveland, Ohio
Manning, Maxwell & Moore, Inc.
New York, Philadelphia, Pittsburgh,
Buffalo, Cincinnati,
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Riverdale Machinery Depot, Detroit, Mich.
Coughlin-Kirkby Mch. & Sup. Co., Toledo, O.
Wayne Mch. Co., Ft. Wayne, Ind.
Dayton, Ohio
Hill, Clarke & Co., Chicago, Ill.
F. E. Satterlee Co., Minneapolis, Minn.
F. O. Stallman Supply Co., San Francisco, Cal.
Los Angeles, Calif.

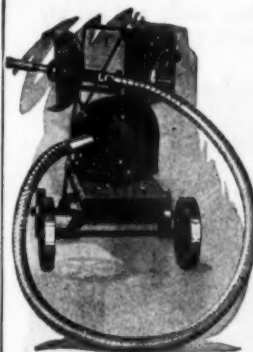
FOREIGN:

Bevan & Edwards Pty., Ltd.,
Melbourne, Sydney

Seison Engineering Co., London, Belgium,
France, Italy

THE THOMPSON GRINDER CO., Springfield, Ohio

Type M 8



We make them

Strand

TRADE MARK

The Big One

2 H. P. Motor

This heavy type machine will carry grinding wheels up to 10 diameter, $1\frac{1}{4}$ " thick.

Very satisfactory wherever used.

We build several sizes

Write for Catalog

N.A. STRAND & CO.

Machinery Hall, CHICAGO

Ott Grinders

Combine the essentials of
ACCURACY and **RIGIDITY**
with **SIMPLICITY** of design

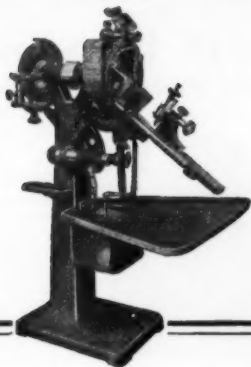
Simplicity accounts for their price, and for
their popularity among good operators.

5"x18" Plain — 10"x32" Universal — 6"x6" Internal

Ott Grinder Company

200 West Tenth St.,

Indianapolis, Ind.



*The Improved
Wilmarth &
Morman New
Yankee Twist
Drill Grinder*

Backed by 16,000 Users

The New Yankee Twist Drill Grinder has stood paramount in service for 22 years.

Naturally it has become the choice of perceptive users the world over, accurately grinding both straight and taper shank drills without any time loss for adjustments.

From No. 52 to 4" size drills, the New Yankee keeps them with correct angles, proper clearance and equal cutting lips, thereby speeding production and producing finer work.

Is furnished in 9 Belt and 8 Motor driven models, all equipped with built-in wheel truing device.

INVESTIGATE

Wilmarth & Morman Co.

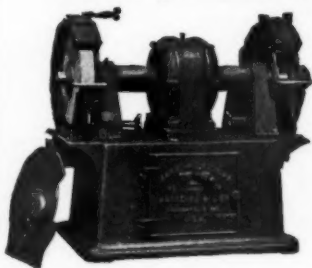
Master Grinder Makers

Manufacturers of Precision Surface Grinders, Universal Cutter and Tool Grinders and Drill Grinders

1185 Monroe Avenue, N. W., Grand Rapids, Michigan

Marschke 18" Heavy Grinder

Practically Eliminates Vibration



This well-built, self-contained grinder is a real economy tool—accurate and dependable.

Enclosed motor construction, a. c. or d. c.; SKF ball bearings thruout; patented hood for greater safety; complete exhaust system.

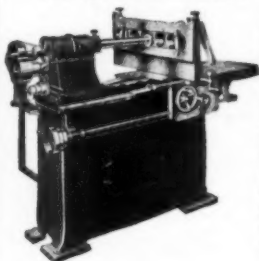
Emery wheel 18x3". Also made for 20x3" wheel.

Write for the specifications and price—they're interesting

Marschke Mfg. Co., Inc., Indianapolis, Indiana

Grinds All Cylinders—

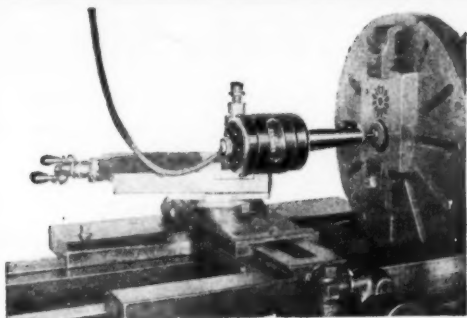
Perfect Work with the "Schmidt" Internal



Invaluable for the fully equipped automobile and tractor repair shop. Will regrind six Ford blocks a day—larger cylinders in proportion. Vanadium steel arbor. Ball-bearing rocker arm counter-shaft and ball-bearing in rear end of emery wheel spindle. The "SCHMIDT" is simple, compact, economical.

Gives top-notch service with rock-bottom economy

B. L. Schmidt Co., Dept. A 8, Davenport, Ia.



A Good Job of Grinding

**depends on the accuracy of the tools
used as well as on the mechanic**

Because jigs, dies, gages, bushings, etc.; warp during tempering, thousands of mechanics use the perfectly balanced Dumore Grinder to bring tools to .0001" accurate. Operating at a high rate of speed, even the smallest wheels of the Dumore clear themselves and maintain correct size, eliminating chatter marks and taper or bellmouth.

No matter what your equipment is, you can use a Dumore to advantage. Write us for complete information.

WISCONSIN ELECTRIC COMPANY
4338 Sixteenth Street RACINE, WISCONSIN

DUMORE

HIGH SPEED

GRINDERS



Beaudry Hammers

**For General Forging
Belt or Motor Driven
50 to 500 lb. Rams**

**Simple,
Powerful,
Durable**

Catalogue on request

BEAUDRY & CO., Inc.
45 Bromfield St.,
BOSTON, MASS.

The Grant Rivet Spinner



**Unequaled for Speed,
Efficiency, Economy**

The GRANT cuts hand riveting costs
80 per cent.

It spins 60 rivets per minute. Produces
perfectly rounded heads—polished sur-
face—free from dents or defacements.

Can operate in the closest corners. A
boy or girl easily works it.

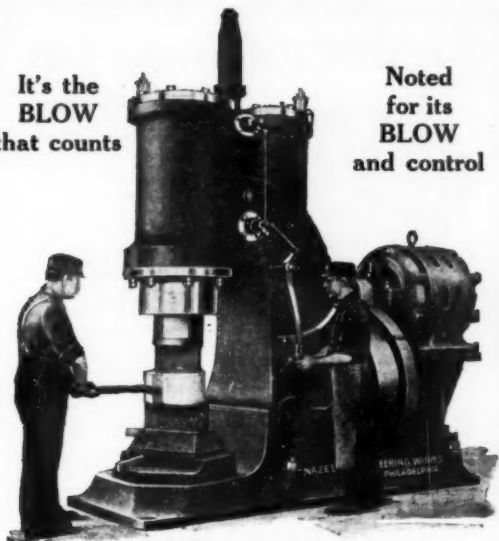
It cannot get on your nerves—OPER-
ATES NOISELESSLY.

Send a sample of your toughest rivet-
ing job **AT OUR EXPENSE** and we will
show you how well the Grant will do the
work.

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.

**It's the
BLOW
that counts**

**Noted
for its
BLOW
and control**



The Nazel Air Hammer Six Sizes—Belt or Motor Drive

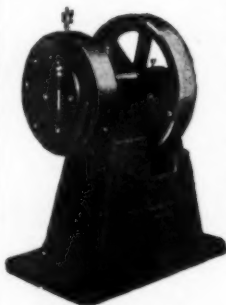
A Hammer and Compressor combined in a single unit, with capacities to 7 inches square, for jobbing, manufacturing and certain classes of shop forging.

Its clinging non-bounding blow, with its force under easy and instantaneous control, insures a greater output per unit of time and labor—hence, reduced cost.

*The Nazel Hammer Book explains; better send for it
It's free, and places you under no obligation*

**Nazel Engineering & Machine Works
Nictown, Philadelphia, Pa.**

The "ETNA" Cuts Swaging Costs To Rock-Bottom



It beats swaging output by the power hammer and knuckle swager by *80 per cent.* A power hammer delivers 400 blows per minute—the *Etna Rotary* 3500 blows per minute.

Swages round stock up to 20 feet per minute. Unrivalled for quickly and accurately tapering, pointing and graduating all kinds of round stock from $\frac{1}{4}$ " to $4\frac{1}{2}$ " diameter.

The "ETNA" makes metal tougher, more elastic and less liable to rust. Ruggedly designed. Eliminates waste of material.

*Let us fully explain its
exclusive merits*

The Etna Manufacturing Co., TOLEDO,
OHIO

Hollow Bored Forgings and Steel Shafts



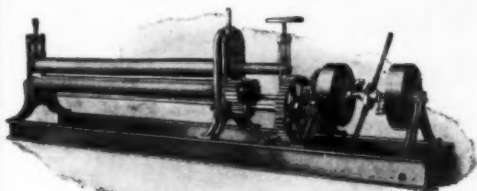
**Piston Rods
Clutch Shafts
Lathe Spindles**

**Rams
Steel Pipes
Etc., Etc.**

They are right in price and quality, with prompt delivery. We give "Service you can depend on."

Let us have blueprints for quotations

American Hollow Boring Co.
Erie, Penna.



Pyramid Type Plate Bending Rolls

These Rolls are carefully designed so that the strains incident to heavy bending are properly distributed among the various parts, thus giving each part and the machine, as a whole, the requisite strength.

The upper roll is adjustable and, in accordance with the best practice, is larger than the other two. The outer housing is hinged, which, in connection with a device for raising the outer end of the upper roll, permits the removal of cylindrical pieces when finished. A four-inch opening between top and bottom rolls provides for the use of wooden forms.

Made in 17 sizes with capacities up to $\frac{1}{2}$ in. and from 50 to 98 in. in length.

Hendley & Whittemore Co.
100 S. State St., Beloit, Wis.

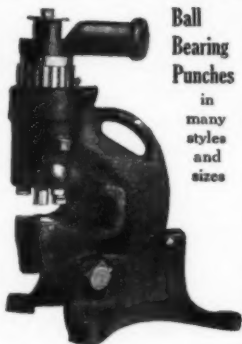
Whitney ^{Ball Bearing} Punch No. 40

Made of 45-50 point O. H. Steel, drop forged. Very rigid—no springing in operation. Now provided with movable handle, to meet user's needs.

Capacity, $\frac{5}{8}$ " thru $\frac{5}{16}$ " iron
Depth of throat, $3\frac{1}{2}$ "
Height of throat, 2"
Weight complete, 87 lbs.

The elimination of friction insures more work at less cost in all Whitney Punches.

Write for Catalog and Price List



Ball Bearing
Punches
in
many
styles
and
sizes

Whitney Metal Tool Co.

109-111 Forbes Street,

Rockford, Ill.

30 days' free trial of this Filing and Sawing Machine

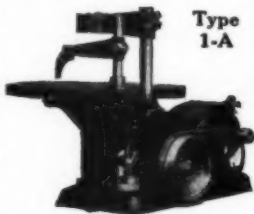
Return at our expense if unsatisfactory

Reduces filing and sawing time in many cases up to 60%, with unskilled help.

Uses standard files from 3" needle to 12" flat or bastard. Adjustable up or down to utilize entire file. Also uses up broken saw blades.

Files punches, etc., where file does not go thru or past work.

A big economy. Soon pays for itself. Anyone can use it.



Type
1-A

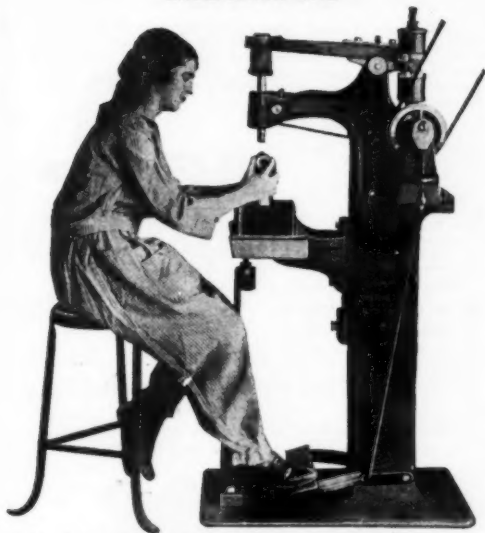
Are you ready for a 30-day free trial?

JOHNSON & BIDDLE TOOL CO., ELKHART, INDIANA

Riveting Revolutionized

"The Hammer with the human stroke"

Heads Rivets Cold



Heads 'em tight or loose, flush, countersunk, or finishes heads any shape desired at the rate of:—

A rivet a second, sizes up to 3-16 in.

A rivet in two seconds, sizes 1-4 to 3-8 in.

A rivet in three seconds, sizes 7-16 to 5-8 in.

Built in Eight Sizes

To handle rivets from the smallest, up to 1½" in diameter. Send us sample assembly parts with rivets or sketch of your work, and let US shoulder your riveting problems.

Send for the High Speed Hammer Book

Department 13

The High Speed Hammer Co., Inc.

Rochester, New York

Soon Repays Its Own Cost

Peter Bros. Abrasive Metal Cutter

Cuts all kinds of metal easily, perfectly, rapidly and 75% cheaper than can be done with the hack saw, file, etc. It prevents waste of expensive High Speed Steel in nicking and breaking. Why not let it save you the high-priced time of your toolmakers? *Doesn't draw the temper.*

8" Size \$22.50, with C. S.

Splendid for tool room. Cuts high-speed steel up to $\frac{1}{2}$ " square.

12" Size \$60, with C. S.

Cuts up to 2 $\frac{1}{2}$ " diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

Write us or ask your dealer

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.



"Poorman" Sheet Metal Working Machinery

Squaring Shears—84 sizes. Gap Shears—21 sizes. Corrugating & Crimping Rolls.
Corrugated Tank & Can Machines. Straight Line Forming Presses & Brakes.
Corrugated Culvert Rolls. Conductor Pipe & Trough Machinery



The Streine Tool & Manufacturing Company
New Bremen, Ohio, U. S. A.

G. A. Lewthwaite Durable Tools

For Distinctive Service

"Wearable"

Punches and Dies

For All Makes of Machines



Specially built for toughest, heaviest service. Quality of steel, rugged design and perfection of temper account for the long list of satisfied customers we are privileged to serve.

SHEAR and ROD CUTTER

An un-
and boiler
Its quality
material and ex-
ability serve to ex-
productive capacity. It can
ate beyond its shearing power.

usually handy tool for blacksmith
shops, and ship-building plants.
mechanism, high grade
ceptional depend-
plain its great
oper-



Also

Pipe Benders
Bar Benders
Power Presses
Foot Presses
Etc., Etc.

BAR SHEARS, $1\frac{1}{4}$ " capacity and smaller.
PLATE SHEARS, $\frac{3}{8}$ " capacity and smaller.

Postal brings our Catalog of Iron Workers' Tools.

George A. Lewthwaite Co.

116 Walker St., - - New York

"QUICKWORK"

Registered in U. S. A. and Foreign Countries

Rotary Shears

Made in 7 Sizes

Cut all gauges of sheet and plate metal up to 1 inch thick in straight or irregular shapes and openings without cutting in from side of sheet. Leaves square, true edge that requires no finishing. Used in building ships, boilers, tanks, cars & general plate and sheet metal work.

Save 50 to 90%

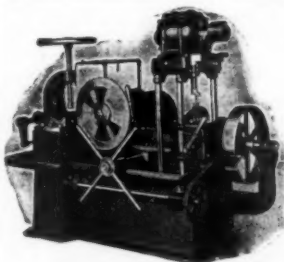
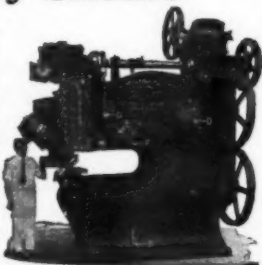
Eliminates Oxyacetylene cutting and plate planing

Write for catalogue No. 60

Patented June 3, 1913; Aug. 26, 1919.

THE QUICKWORK COMPANY, St. Marys, Ohio, U. S. A.

Cable Address "Quickwork," "W. U." and "General" Codes



KNOWLTON Cold Saw

Belt or Motor Drive.

Large Capacity.

Fast Cutting.

Easy to operate.

Handles all shapes.

Unexcelled for sawing metal bars, Structural Steel and Large Pipe.

Circular on request

Knowlton Machine Co., Westbrook, Maine

Domestic Dealers

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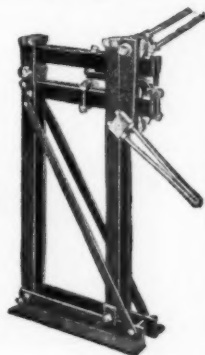
Shops All Over Are Adopting Them

**They are different.
They do the work.
They are ALL STEEL.**

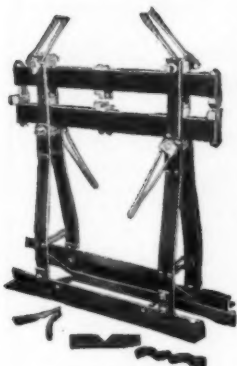
Marvel

**Punching, Shearing
and Bending
Machines**

**Are the Right Machines in
the Right Place.**



No. 22



No. 23

You can notch your angle iron and bend it to 90 degrees for making frames, bend flats, punch, shear and do a variety of other work. All on one machine.

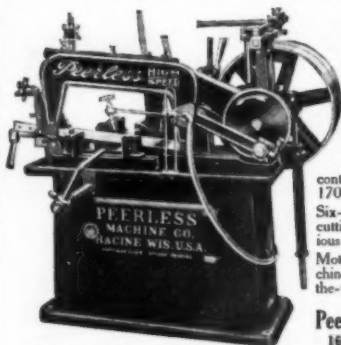
*We will gladly send our
catalogue anywhere
on request.*

Armstrong-Blum Mfg. Co.

341 N. Francisco Ave.,

Chicago, Ill.

Peerless HIGH SPEED Hack Saw Machines



Right Hand View 6"x6" Belt Drive

Meet the needs of your shop for a reliable, straight cutting, fast sawing machine that gives more cuts per blade. Sizes, 6"x6", 9"x9", 13"x16".

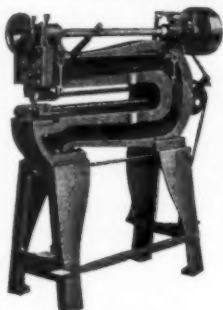
Note the overbalanced saw frame and guide. Feed control from 6 lbs. to 170 lbs. by 6 lb. steps.

Six-speed machines for cutting metals of various hardnesses.

Motor mounted machines for use in out-of-the-way places.

Peerless Mche. Co.
1609 Racine Street
RACINE, WISCONSIN

Does An Unlimited Scope Of Work On Which A Rotary Shear Is Useless



The New "Gray" Sheet Metal Cutter

Cuts out of sheets or plates any shapes which can be cut with any character of shear, besides an unlimited scope of work for which a shear is useless. Cuts any intricate pattern, and feeds like a sewing machine. Leaves edges smooth. No springing or buckling.

Respective capacities of Nos. 0, 1, 2 and 3:

16"	throat,	1/8"	plate
34"	"	3/16"	"
36"	"	3/8"	"
36"	"	5/8"	"

Better look into it

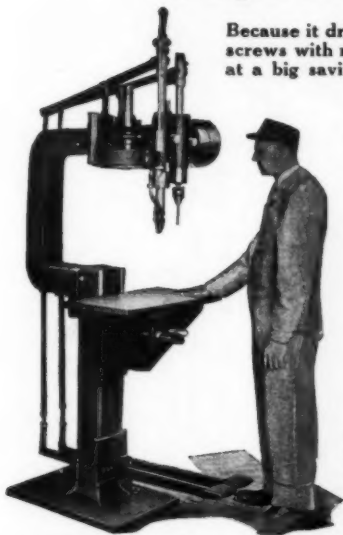
W. J. SAVAGE CO., Knoxville, Tenn.

Each Machine

In the shop of one large concern, annually

Pays for Three

Because it drives wood or machine screws with mechanical perfection at a big saving in time and labor



One large concern,
which has seven

Reynolds Automatic Magazine-Fed Screw Driving Machines

states that they paid
for themselves in
about four months, or
at the rate of three
times a year.

Its big saving in labor costs pays for a Reynolds Automatic so quickly and so many times over, that to continue to drive screws in quantity by any hand method is tremendously wasteful.

It drives machine screws, wood screws, stove bolts, hex. head or square head bolts, or most anything that can be magazined.

May we recommend the one best suited to your work?

The Reynolds Machine Company

Dept. H. H.,

Massillon, Ohio

CULLMAN SPROCKETS

STOCK AND TO ORDER



Diamond, Whitney, Baldwin, Duckworth and
Coventry Chains, Block, Roller and
High Speed Silent types on hand

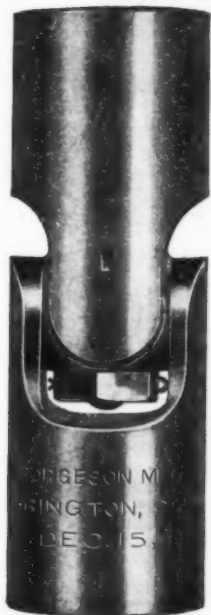


CATALOG

CULLMAN WHEEL CO.,
1359 ALTGELD STREET
CHICAGO

Borgeson Universal Joints

**Of Superior Construction
And Proven Reliability**



Sizes $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, 1 $\frac{1}{4}$, 1 $\frac{1}{2}$, 1 $\frac{3}{4}$, 2 & 2 $\frac{1}{2}$ inch

Superior Construction:—Their construction is both simple and scientific. They have great torsional strength. There are no pivotal floating pins or parts to work loose. The yokes are ground concentric with the bearing pins and run true with each other. Oiling feature is self-contained. Every detail is as near perfect as is humanly possible.

Proven Reliability:—Out of the thousands of Borgeson Universal Joints sold last year we have not been asked for a single replacement.

A Competitive Test:—One manufacturer gave us an order for \$17,000 worth of Borgeson Universal Joints after testing them with 65 other makes under maximum strain. They give the service that makes them unbeatable.

Your Universal Joint problems can be solved by us with the same satisfaction we have given to others. May we have the opportunity?

Tells us your requirements. Consult with us freely, without obligation. It will be our pleasure to furnish full information applicable to your special needs.

The Borgeson Manufacturing Co., Inc.
Torrington, Conn.

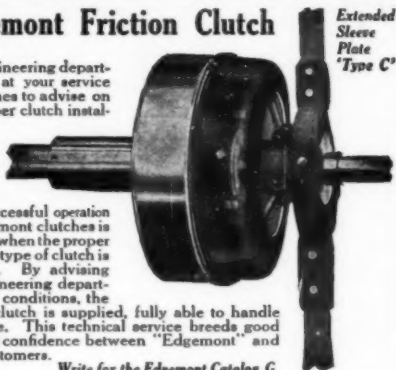
Edgemont Friction Clutch

Our engineering department is at your service at all times to advise on the proper clutch installation.

The successful operation of Edgemont clutches is assured when the proper size and type of clutch is selected. By advising our engineering department of conditions, the proper clutch is supplied, fully able to handle the drive. This technical service breeds good will and confidence between "Edgemont" and their customers.

Write for the Edgemont Catalog G

Edgemont Machine Co., Inc., DAYTON, OHIO



Extended
Sleeve
Plate
"Type C"

COOPER UNIVERSAL JOINTS FLEXIBLE COUPLINGS

"YOU CAN'T BREAK THEM OR WEAR THEM OUT"

Smooth; neat; only 5 simple parts; large oil space; working surfaces case-hardened; no limit to size; guaranteed stronger than shaft at any angle.

6 PATENTS



Three hundred years ago Hooke invented the Universal Joint with fixed centers. Three hundred years have elapsed and still the Hooke type of universal joints are burning up power and breaking in operation.

The Cooper Patented Universal Joint with no fixed centers is just as frictionless as the crosshead of an engine at any angle. **"You can't break them or wear them out"** with shafts joints are bored for. Perfect lubrication at any speed.

Sizes $\frac{1}{4}$ " to 2" in stock bored to fit YOUR shafts.

Send for one and try it out

Cooper Flexible Transmission Co., Inc.
1723 8th Ave., Brooklyn, N. Y.

OVER 50,000 MILES
NOW REPORTED ON

“WHITNEY”

High Efficiency

FRONT END
MOTOR CHAIN DRIVES
AND STILL IN GOOD CONDITION



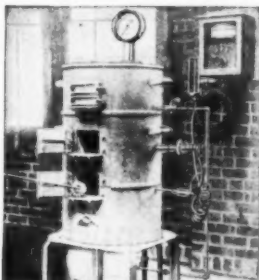
Not one of these
chains has been
known to skip a
sprocket tooth.

Chains having a
high mileage save
inconvenience
and frequent re-
placement ex-
pense.



The Whitney Mfg. Co.
HARTFORD, CONN.

The "TRIAD" Furnace Insures High Grade Heat Treating at Less Cost



It enables you to perform three different tool-tempering operations at once *within the one furnace*:—

Section 1.—Gives 2300 Fahr. for H. S. Steel;

Section 2.—For pre-heating;

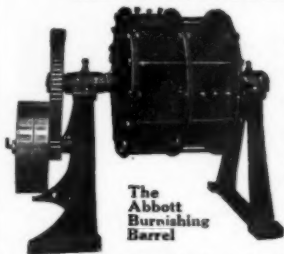
Section 3.—For drawing the temper.

There is no pitting, scaling and wasting metal. The "TRIAD" will cut your heat-treating fuel bill over 60%. Furnace heats up in from 10 to 20 minutes. It takes care of tools, flat or cylindrical, 4"x10". No cold corners.

Send for Catalog No. 5

The W. R. Bennett Co., P. O. Drawer X
Elmwood, Conn.

Some Burnishing Records With the Abbott Burnishing Process



The
Abbott
Burnishing
Barrel

In one shop two operators have supplanted 150 polishers and buffers.

In a typewriter plant they now burnish 50,000 pieces at the former cost of buffing 100 pieces.

One operator can attend several barrels; each barrel finishes thousands of pieces; hence the immense saving.

Every article is uniformly and perfectly polished; no bent or broken pieces; no scrap barrel filled with bad work.

Write for copyrighted Booklet and send samples for burnishing
All sizes of burnishing balls and soap chips for immediate shipment

The Abbott Ball Company
Elmwood District, Hartford, Conn.

—for your pack case-hardening

Tri. B. Brand Pack Carbonizer

Here's a light, fast, long-lived carbonizing agent. It is widely used by the machine tool trade and in many lines of steel fabrication for deep hardening in boxes in muffle furnaces.

This ideal product is made entirely of hard carbons—there is not an ounce of any volatile matter in its composition, and consequently there's no internal combustion as is the case with raw bone. While it is not cheap, neither is it as costly as the so-called "patented compounds" of pellet and fancy forms.

You will find our



the best for Case-Hardening. It's a scientifically prepared, uniform, *non-poisonous* material, which is so much better than cyanide in results, economy and safety, that the latter is promptly "ditched" wherever Ferro Case has been tried. It is made in two grades:—Ferro Case M is for use in any style or make of cyanide melting furnace, and is handled in the same way; Ferro Case S is sprinkled upon the red hot steel or iron.

*All we ask for is a trial order—the repeat orders
take care of themselves.*

C. G. Buchanan Chemical Co.
Sta. H., Cincinnati, Ohio

We are prepared to estimate on

Building Special Machines

from submitted plans and specifications—making special tools. We have the experience, men and “know how.”

Let us have your inquiries

A. F. WAY CO., Inc.

P. O. Box 1088,

HARTFORD, CONN.

Machine Tool Makers

should investigate carefully the facilities offered by **Hitchcock's Machine Tool List** for reaching this trade in all parts of the country. Its circulation is specialized to completely cover *every line of manufacture* in which machine tools are used—as well as all railroad and other tool-using shops—with a thoroughness and effectiveness not equalled by any other advertising medium.



**Knickerbocker asks you
to note the reasons why
engineers order "Rarefied"
Dust Collectors installed:—**

- ☐ Because they are more efficient.
- ☐ Because they are longer lived.
- ☐ Because their cost is moderate.
- ☐ Because they cost less for upkeep and repairs.

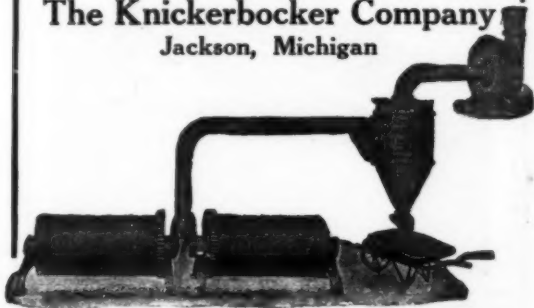
Solvay Process Co. now uses.....	26
Western Electric Co. now uses.....	12
Westinghouse Elec. & Mfg. Co. now uses.....	21
Weston-Mott Co. now uses.....	12
Willis-Overland Co. now uses.....	10

And there are many other users.

The "Rarefied" Dust Collector operates on the "rarefied" or partial vacuum principle. Expert engineers have ordered their installation after exhaustive tests. They are successful with the most difficult dust.

To help you understand the merits of this modern dust collector we would like to send you a copy of our explanatory Booklet. Send us your address today.

The Knickerbocker Company
Jackson, Michigan



Made in five sizes, for balancing anything that turns on a shaft, up to 10,000 lbs. weight



Improved Anderson Balancing Ways

Always ready, without adjustment, to accurately balance anything that turns on a shaft up to 10,000 lbs. Ball bearing. Sensitive.

"Swing"	20"	40"	60"	72"	96"
Greatest distance between standards.....	20"	30"	30"	66"	88"
Capacity in lbs.	1000	2000	2000	5000	10000
Approx. shipping weight	45	90	150	350	650
Code	Bend	Bid	Bis	Bib	Ben

Any of above can be furnished with shafts extended.

Anderson Bros. Mfg. Co.
1915 Kishwaukee St., Rockford, Ill.

DO You Use AIR?

**THE POWELL
AIR GUN VALVE**

"JUST PRESS"
THE BUTTON

POWELL
AIR GUN

BUY
POWELL
AIR GUNS
KEEP
CLEAN

CLEANS
WORK BENCHES
AND
MACHINE TOOLS
MADE IN SIZES
1/2" TO 1"

ORDER A SAMPLE
THE W. M. POWELL CO.
1200 DRAPER ST.
CINCINNATI, O.

What we do with Hitchcock's Machine Tool List

The table below shows the circulation of Hitchcock's Machine Tool List by States, and incidentally how the users of iron working machinery are distributed. The figures given, except for steam and electric railways, and for a few hundred of the larger establishments in which by request copies are addressed to individuals especially concerned with the selection and purchase of tools, stand for the number of plants to which the Tool List is regularly mailed, and as these include manufacturers and shops of every kind in which machine tools are employed, the density of the market in any part of the country is clearly shown.

The circulation of the Machine Tool List in this respect is peculiar; there is no other like it, or anywhere near like it, because, under the present postal laws and regulations, a similarly complete distribution cannot be made by any other than a publication that is mailed free. This gives the Tool List service its distinctive value, and beyond question has been the prime factor in its success. No doubt other things have had their influence upon this result also, but the main reason why the Tool List has thrived is its ability to do for advertisers what no other publication can do—put their advertising messages across to the whole body of possible buyers, everywhere in the country.

Revised to July 1, 1921

Alabama	132	Nevada	5
Alaska	2	New Hampshire.....	111
Arizona	16	New Jersey.....	920
Arkansas.....	35	New Mexico.....	4
California.....	698	New York	3,236
Colorado	144	North Carolina	124
Connecticut	789	North Dakota.....	29
Delaware.....	48	Ohio	2,499
District of Columbia.....	51	Oklahoma.....	92
Florida	83	Oregon	191
Georgia	131	Pennsylvania.....	2,657
Idaho	16	Rhode Island.....	243
Illinois.....	1,911	South Carolina	54
Indiana	901	South Dakota.....	34
Iowa	384	Tennessee.....	190
Kansas	178	Texas	272
Kentucky.....	160	Utah	33
Louisiana.....	128	Vermont	78
Maine	187	Virginia	337
Maryland.....	302	Washington.....	196
Massachusetts.....	1,514	West Virginia	138
Michigan.....	1,300	Wisconsin.....	863
Minnesota.....	319	Wyoming.....	4
Mississippi.....	60	Steam Ry. Officials	1,390
Missouri.....	570	Elec. Ry. Officials	604
Montana.....	34	Technical Schools	212
Nebraska.....	107	Foreign.....	224
Total.....		25,140	

Underwood Portable Miller

Saves Time in Railway and Repair Shops

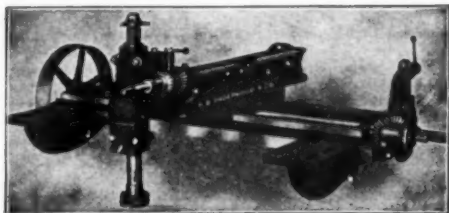


Figure 110

THIS MILLER does accurate, dependable work, often at a 50 percent saving in time. It enables you to accomplish a wide range of rush repairs *in place*, which makes it a very popular machine in every shop fortunate enough to own one.

Figure 110 faces a valve seat 22x40x7 in., or does other milling of similar dimensions. It has power feed in both directions and is usable in any position, horizontal, vertical or inclined. Operated by hand, small steam engine, air or electric motor. If you need something special, we can build it for you. Our line of up-to-date Portable Tools includes the following:—

Millers; circular planer tools; radius planers; rotary planers; machines for truing eccentrics, facing domes, arms for facing cylinder flanges; rotary flue cleaners; pipe benders; locomotive cylinder borers; boring bars for lathe work; crank pin turners and reflex water glass grinders. We build special machines to order.

Write for the Catalog—it pays to have one handy

H. B. Underwood Corporation

1015-25 Hamilton St., Philadelphia, Pa.

Second-Hand Machinery

Lists of Second-Hand Machinery, either for sale or wanted, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue, plus **\$2.50** for name and address. Minimum charge, **\$5.00**. No display permitted in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you seek is not listed, use the blank enclosed to make known your wants to the publisher, who will pass them along to all Machine Tool List advertisers.

FOR SALE BY

A. A. McLaughlin & Co., 24 West Second St., Cincinnati, O.
 Hammer, Beandry 100 lb., belt driven \$300.
 Lathe, Niles 24"x12", blocked to swing 36". Has chuck and face plate. 750.
 Lathe, Mueller 15x6" high speed 175.
 Lathe, Fox 14"x5" screw cutting 125.

FOR SALE BY

Mayer Coating Machines Co., Inc., * * * Rochester, N. Y.
ELECTRIC WELDER.
 One electric welding machine, with 7½ h. p. generator and motor, 220 volts, d. c. Cannot use it, account of moving to new building having alternating current. Cost \$1,045 only few months ago; will sell complete for \$850. Practically good as new.

FOR SALE BY

Industrial Mchy. & Sales Co., 549 W. Washington Blvd., Chicago
 Air compressor, 7x6 Ingersoll-Rand, 15 h. p., 220 v., a. c. motor attached with belt. Planer, 36"x23"x16' table, extra width, 2 hds., power raising and lower, belt drive.
 Grinder, No. 60 Heald, cylinder. Planer, Ohio, 24"x24½"x6' table, belt drive, single head.
 Grinder, Mattison, cylinder. Press, No. 21½ Bliss, o. b. i. geared.
 Grinder, 24" Blanchard, vert. spdl. surface, magnetic chuck & wheels. Press, No. 76 Consolidated, geared.
 No. 60 Heald Grinder, No. 65 Heald Cylinder Grinder, and one Madison Cylinder Grinder for sale at a bargain. Send us your inquiries.

FOR SALE BY

Federal Machinery Sales Company,
8 N. Jefferson St., Chicago, Ill. 218 Sycamore St., Milwaukee, Wis.
 Second-hand Tools—Partial List
 Drills, multiple spindle, No. 12 Natco, new (2), each with 10 spindles.
 Furnace, gas oven, No. 9 Stewart.
 Gear generator, 14" Lees-Bradner.
 Grinder, plain bearing disc, No. 15 Gardner.
 Grinder, vertical spindle, horizontal disc, No. 24 Gardner.
 Grinder, plain, 6"x32" Norton.
 Lathe, 17"x6" Greaves-Klusman, with d. c. motor.
 Miller, duplex, No. 3 Van Norman, new.
 Planer, 26"x26"x8" Whitcomb-Blaisdell, two heads.
 Screw machine, 8" No. 1 Southworth.
 Screw machine, 1½"x10" Millholland, new.

SECOND-HAND MACHINERY

FOR SALE BY

Cyril J. Bath & Co., 1603 St. Clair Ave., N. E., Cleveland, O.
Sales Agents—Surplus Equipment of American Ship Bldg. Co.

Good Tools—Low Prices

BAR STOCK MACHINES AND TURRET LATHES.

2" & 3" P. & W. turret lathes, power cross and long. feed. | No. 1 Warner & Swasey screw mche.
 21" & 24" Gisholts, 1 taper attach.

BOLT AND NUT MACHINERY.

3" Landis bolt cutter, late model. | 4" Landis extra long bed, motor drive.
 1" Acme, style B.

BORING MILLS.

No. 3 Defiance, horizontal table type, single pulley. | 48" Gisholt, double swivel head, single pulley.
 No. 31 Lucas horizontal. | 51" Niles, swivel and turret heads, gear drive.
 No. 32 Giddings & Lewis horizontal.
 72" Sellers, 2 swivel heads.

DRILLING MACHINES.

2', 3' & 4' American plain radials. | 9' Cleveland wall radial.
 4' Western plain, motor drive. | Henry & Wright and Sipp sens.
 4 1/2' Morris plain, single pulley. | 26" Barnes, sliding hd., tap attach.
 5' Fosdick plain. | 28" Silver, slicing head.
 6' Dreses full universal. | No. 2 1/2 three-spd. Allen drill press.

GRINDERS.

14x50 Norton plain. | No. 2 Brown & Sharpe surface, Heald magnetic chuck.
 10x72 Brown & Sharpe plain. | 18" Bryant internal.
 No. 3 Landis universal. | 12" Bridgeport, a. c., motor drive.
 No. 3 Cincinnati 12x48 universal. | New Yankee drill, motor drive.
 No. 2 & No. 2 1/2 Brown & Sharpe univ.
 No. 13 Brown & Sharpe univ. tool.

LATHES.

12", 14", 16" and 24" Hendey. | 34"x18" Putnam, cone dr., solid spdl.
 Gap lathe, Rahn-Larmon, 28x52x12. | 42"x28" Pittsburgh heavy duty, motor drive.
 14"x 6' Champion, taper, q. c., d. b.g. | 42"x20" Schumacher & Boye, q. c. g.
 16"x 8' Bradford, q. c. g. | 42"x32" New Haven, d. c. motor dr.
 24"x14" Boye & E., cone dr., d. b. g. | LeBlond universal crankshaft lathe, latest model.
 32"x20" New Haven, b. g., cone drive, solid spindle.

MILLING MACHINES

Nos. 1 1/2, 2 and 4 Cincinnati plain. | No. 5-B Becker vertical.
 Nos. 3, 3-A and 4-A B. & S. univ. | No. 2 Brown & Sharpe vertical.
 Nos. 2 and 3 Kempsmith plain. | No. 12 Brown & Sharpe plain.
 No. 3 Kempsmith universal. | Type A Briggs, Lincoln type.
 No. 3 heavy duty LeBlond universal. | No. 7-H Becker, Lincoln type.
 No. 3 and No. 3-B hvy. B. & S. pl.

PLANERS.

24"x24"x 6' Liberty. | 48"x48"x20' Patch, 4 heads, reversing motor drive.
 24"x24"x 6' Gray. | 48"x12" Cleveland openside.
 24"x24"x 6' J. B. Pease. | 60"x60"x20" Sellers, spiral dr., 4 hds.
 30"x30"x 8' Gray. | 24" Cincinnati crank planer.
 30"x30"x 8" Niles-B.-P., box table.
 48"x48"x12" Gray, 3 heads.

PRESSES.

D-301 Ferracute, 4" stroke, 32" between housings.

PUNCHES AND PLATE WORKING TOOLS.

16' Hilles & Jones 1/2" plate bending rolls.
 Pels universal angle, bar, plate shear and punch.
 12" Southwark horizontal punch, 1 1/2x1 1/2.
 84" No. 2 Long & Allstatter single end shear, 1/2".
 84" No. A Long & Allstatter single end punch, 1 1/2x1 1/2.
 No. 4-B Quickwork rotary shear, 60" throat, 1/2" plate.

RIVET MAKING MACHINE.

Acme size "A" rivet and track bolt machine, large equipment.

SECOND-HAND MACHINERY

Cyril J. Bath & Co.—Continued.

SHAPERS.

16", 20", 24" & 28" G. & E.
20" & 24" American.

20" & 24" Cincinnati.

SLOTTERS.

10" Newton, cone drive.
18" Newton, cone drive.

18" Betts, cone drive.

MISCELLANEOUS.

Cold saw, No. 11 Higley.
Crankshaft, for No. 77½ Bliss press.
Crankshaft lathe, LeBlond universal, latest model.

Keyseaters, Nos. 2 & 4 Baker.
Motor, 3 h. p. Cleveland, a. c.
Motor, 10 h. p. Card, d. c.
Thread roller, No. 4 Manville.

FOR SALE BY

Herman L. Winterer,

943-53 N. Front St., Philadelphia, Pa.

LATHES.

43"x17'4½" Bement-Miles.
42"x25' 6" Putnam.
42"x28" Johnson d. b. g., t. a.
42"x16" Niles.
37½"x14" Johnson d. b. g., q. c. f., t. a.
32"x12" Pittsburgh, heavy duty, q. c. g.
26"x16' 6" American, q. c. g.
27"x12" Bullard.
26"x11" Wickes, q. c. g.
28"x10" Niles, q. c. g.
25"x14" Hendey, q. c. g., taper attachment, oil pan, (2).

24"x14' Porter.
21½"x8' LeBlond.
20"x8'6" Walcott, d. b. g., q. c. g., (2).
26"x 8' Whitcomb Blaisdell, q. c. g.
19"x12' Flather.
19"x10' Draper, patent head.
18" x 7' Chard, d. b. g., semi q. c. g.
18"x6' to 8' lathes. (6).
17"x 6' Lodge & Shipley, q. c. g.
16" Lathes. (10).
14" Lathes. (19).
And many others.

TURRET LATHES.

43"x 6' Lodge & Shipley chucking.
28" Pond, triangle.
3x36" Pratt & Whitney hollow hex.
19"x7' Fay & Scott.

No. 22½ Garvin Monitor.
No. 3 Bardons & Oliver, back grd.
14"x4' Warner & Swasey.

DRILL PRESSES.

5' Bickford radial.
5' Prentice radial.
42" Economy radial.
40" Barnes horizontal radials, (2).
36" Bickford radial, circular base, motor driven.
18" 4-spindle 2-housing, Foote-Burt.
14" 6-spindle Allen sensitive.

14" 4-spindle Allen sensitive.
40" Lodge & Davis, b. g., sliding hd.
20" Barnes, geared head.
20" Hoosier, new. (3).
20" Champion, new. (6).
12" Allen, bench.
Plain drills, all sizes.
Drill presses, assorted sizes.

MILLING MACHINES.

38"x6" Ingersoll horizontal slab.
No. 5 Cincinnati, table 9½x50½".
No. 15 Garvin, table 12x42".
No. 3 Becker Bramard, table 12x40".
No. 3 Cincinnati, table 12½x47".

Whitney hand miller.
No. 27 Industrial Works, Lincoln type, table, 7x27".
Gooley & Edlund, 7½x46" table.

PLANERS AND SHAPERS.

48"x48"x16" Pond planer, 3 heads.
30"x30"x8" Putnam planer.
26½"x26" x 6' Hendey planer.
48" Morton draw-cut shaper.

39" Pedrick & Ayer, open side.
30" Cincinnati.
16" Gould & Eberhardt shaper.
14" Warren shaper.

MISCELLANEOUS.

Bolt machine, ¾" National.
Boring mill, 100" Sellers, vert. dbl. hd.
Boring mill, car wheel, 60" Newton.
Boring, drilling and milling machine, 17½" Bement Niles horizontal.
Grinder, 13½"x5" Landis universal.
Grinder, disc, No. 17 Besly.
Grinder, disc, No. 1 Besly.
Hammers, 60 lb Bellefonte upright; 2.
Keyseaters, 18" stroke Morton, (2).

Keyseater, Mitts & Merrill No. 5.
Keyseater, Mitts & Merrill No. 2.
Punch presses, all sizes, (105).
Punch & shear, Industrial Wks, d. c., capacity 4" in 4", squaring 4"x6".
Slotter, Newton, 20"; cir. table.
Slotter, Newton, 18"; cir. table.
Slotter, Bement 10"; cir. table.
Tooth rounding machine, Schuchardt & Schutte.

Large assortment of General Machinery. Send for Complete List.

SECOND-HAND MACHINERY

FOR SALE BY

Russell Machine Co., 28th St. & A. V. R. R., Pittsburgh, Pa.
LATHES.

48"x32" N. B. P., triple geared.
48"x28" Niles, c. r.
48"x26" Pond, triple geared.
28"x12" Boye & Emmes, q. c. g., d. b. g.
26"x12" Pittsburgh, dbl. b. g.
26"x20" 6" Putnam, b. g., c. r.
26"x10" 6" Walcott, q. c. g.
24"x16" 6" Johnson lathe.
19"x10" LeBlond, motor drive.
19"x 6" Bullard, c. r., h. s.
18"x 8" Mueller, q. c. g., new.

18"x 8" Sidney, q. c. g., d. b. g.
18"x 8" Rahn-Mayer-Carpenter.
16"x 6" Columbus, q. c. g., new.
15"x 8" Schellenbach, d. b. g., h. s.
14"x 6" Hendey, q. c. g.
10"x56" Star, foot power.
24"x 6" Gisholt turret, 64" h. s.
24"x 6" Gisholt tur., 64" h. s., m. d.
14"x 5" American speed lathe.
13"x 5" Blount speed lathe.
18"x7 1/2" Wood lathe.

PLANERS AND SHAPERS.

20"x20"x51" planer, 1 hd.
24"x24"x8 Chaudler planer, 1 head.
48"x48"x22" Pond planer, 4 heads.
48"x48"x12" Sellers, box bed, heavy duty planer, 4 hds., with motor.

72"x56"x12 1/2" Betts planer, 2 heads.
24" Cincinnati b. g. shaper, m. d.
24" Walcott geared shaper.
24" Stockbridge shaper.

DRILLS AND BORING MILLS.

20" Champion, new, pl. w. & l.
20" Silver, new, plain w. & l.
32" Gould-Eberhardt, b. g., upright.
36" Snyder b. g. drill.
40" New Haven, b. g. drill.
3", 5", 6" & 7" Prentice radial drills.
6", 7" & 8" Pond radial drills.
9" Baugh radial drill.
No. 1 Myers 10" sensitive drills.

10" Dwight-Slate sensitive, floor.
14" Floor type sensitive.
30" Warner-Swasey boring mill.
36" Bridgeport boring mill.
42" Bullard boring mill, 2 heads.
50" Bullard boring mill, 2 heads.
60" Niles boring mill, 2 heads.
72" Pond boring mill, 2 heads.
90" Niles boring mill, 2 heads.

PUNCHES, SHEARS, PRESSES AND ROLLS.

50" throat Reade spl. end punch and shear; massive construction.
No. 45 Buffalo punch, 1 1/2".
No. 4 Doelger & Kirsten alligator shear, cap. 4 1/2" round soft steel.
Garrison m. d. alligator shear, 15" knife, cap. 3" square, 36000 lbs.
Lewis m. d. alligator shear, 24" knife, cap. 3 1/2" square, weight 50000 lbs.
Morgan plate shear, 96"x1" thick.
Garrison plate shear, cap. 3"x81" m. d.

Mesta plate shear, cap. 1 1/2"x156".
Carlin alligator shears, 24" cap.
Schatz punch and shear, 7 1/2" throat.
No. 56 dbl. housing knuckle press.
Stiles Nos. 3 & 23 inc. presses.
Bliss No. 18 o. b. i. power press.
Bliss No. 75 1/2" s. s. press, 6" stroke.
Bliss No. 76 1/2" s. s., d. g. press, 8" str.
Corry Mch. Co. press, 12" stroke.
No. 116-A Niagara press, m. d.
Straight-side punch press, 1 1/2" str.

MILLING MACHINES.

No. 3 LeBlond plain.

No. 12 Garvin plain, 18"x6"x15".

MISCELLANEOUS.

Air compressor, No. 6 Au-To 3"x4".
Air compressor, 8"x8" hor. b. d.
Band saw, Greaves-Klusman 36".
Band saw, Kane-Roach 30".
Blower, Root No. 3 Acme, hand.
Blower, Sturtevant, No. 4, volume.
Blowers, Buffalo Nos. 8 and 8.
Blowers, Buffalo No. 7-8 vol.
Boiler, 24"x3" vertical.
Bolt cutter, Landis 1 1/2".
Brazing table, all iron, 17"x29 1/2"x31".
Buffer, U. S. elec., spindle 53"x1".
Bulldozer, No. 4 Williams-White.
Chain belt, 16"x8"x1 1/2" p. and gear.
Cold saw, No. 17 Higley, 20" saw.
Cold saw, Wagner, size 18 type 3.
Cold saw, Gliem, 22" diam. 6" cap.
Crane, 10" I-beam, 12'3" span.
Crimping machine for short work.
Engine, gas, 15 h. p. Fenner.
Forges, Nos. 41-43 Champion new.

Grinder, Greenfield cutter & tool.
Grinder, Diamond No. 3 wet tool.
Grinders, Plymouth Nos. 13, 14, 17.
Grinder, Barnes 20" wet tool.
Hammers, 100 & 200 lb. belt power.
Hammers, 2500 lb. Chambersburg, double leg steam forging.
Heading, upsetting and forging machine, 3" National.
Hoist, contractor's steam, with 8 h. p. boiler & 5 h. p. engine.
Ice chipper, opening 17"x11 1/2".
Index centers, 12" B. & S. univ.
Polishing stand, d. end, 42"x3" arbor.
Polishing stand, Cuyahoga dbl. end.
Ripsaw, table, 49"x30".
Roll lathe, United Engr. 26"x18".
Saw, North Wales, hack, 5"x5".
Slotter, Niles 15".
Straightening rolls, 84x10 Cleveland.
Wiring machines, Pexto, bench.

SECOND-HAND MACHINERY

FOR SALE BY

Niles-Bement-Pond Company, 111 Broadway, New York

Located at our various factories and stores.

LATHES.

14"x 8' Whitcomb, q. c.	32"x12' Pond, c. r.
17"x 6' & 8' LeBlond, geared head.	36"x20' Pond, 220 volt, motor, d. c.
20"x10' LeBlond, q. c.	42"x20' Niles, triple geared.
24"x10' Whitcomb, q. c.	48"x30' Niles, triple geared.
26"x10' Pond, 220 volt motor, d. c.	54"x28' American, 220 volt motor, d. c.
24"x24' Niles, c. r.	
28"x12' Pond, c. r.	

TURRET LATHES.

No. 6-A P. & J., 220 volt motor, d. c.	2"x24" Jones & Lamson, cone head.
1", 2", and 2 1/2" P. & W.	24", 28", & 34" Gisholts.
2"x24" W. & S. hollow hex.	32" Conradson American.

PLANERS AND SHAPERS.

14" & 20" G. & E. shapers.	36"x36"x 6' to 25' belt drives.
20" Stockbridge shaper.	42"x42"x14' Bement, 4 heads.
24"x24"x 6' Powell.	48"x48"x20' Bement, 4 heads.
24"x24"x 6', 8' and 10' Whitcomb.	60"x60"x14', 20' & 24' Niles.
26"x26"x 6' Gray.	72"x72"x12' Bement, 4 heads.
30"x30"x 6' & 10' Ponds, 2 heads.	72"x72"x20' heavy Ridgway, reversing motor.
30"x30"x12' Pond, reversing motor.	10'x10'x36' Betts, 4 heads.
36"x36"x16' Pond, heavy reversing motor.	

MILLERS AND GEAR CUTTERS.

Nos. 1 1/2 and 2 Brown & Sharpe universal, cone type.	No. 5 Brown & Sharpe vertical, cone type.
No. 2-A Brown & Sharpe universal, all geared.	Nos. 3, 4 & 6 B. & S. gear cutters.
No. 2-B B. & S. plain, all geared.	15" Gleason bevel gear generator.
Nos. 4 & 5 B. & S. plain, cone type.	6"x48" & 80" P. & W. old style thread millers, also 132" long.

DRILLING MACHINES

28", 32" and 40" sliding head drills.	4' & 6' universal radials.
3', 4', 5', 6' plain radials.	12-spindle P. & W. No. 13 multiple.

GRINDERS.

No. 8 Higley saw grinder.	12"x36" Cincinnati, plain.
9"x30" Fraser universal.	12"x40" No. 3 Brown & Sharpe universal.
10"x72" Norton plain.	

BORING MACHINES.

2 1/2" Bar 4' W. & S. horizontal.	3" Bar No. 1 Lucas horizontal.
2 1/2" Bar 5' Binsse horizontal.	4 1/2", 5" & 6 1/2" Niles floor borers.
3 1/2" Bar 6' & 8' Bement horizontals.	42" and 51" Niles vertical mills.
4 1/2" Bar 8' Niles horizontal.	60" Bement vertical mill.
4 1/2" Bar 9 & 10' Bement horizontals.	10' Niles, 220 volt motor, d. c.

MISCELLANEOUS.

Air compressors, 215', 535' and 835' capacity.	Graduating machine, LeBlond.
Blowers, No. 10 Sturtevant; No. 70 Buffalo.	Hammer, 750 lbs. Sellers.
Crane, 3-ton Niles, 14' 2" span, d. c.	Hot blast apparatus, 120" fan engine, Sturtevant.
Crane, 20-ton 48' span, Sellers, d. c.	Motors, 5 to 100 h. p., d. c.
Engines, 125, 150 and 200 h. p. Philadelphia Corliss.	Pump, 500 gal. steam drive.
Generator set, 100 k. w., d. c. and engine.	Saw, 8" rounds, Higley.
	Screw shaver, No. 2 P. & W.
	Separator, oil, No. 1 American.
	Slotter, 6" Bement.

SECOND-HAND MACHINERY

FOR SALE BY

Botwinik Brothers, - 21 Sylvan Ave., New Haven, Conn.

Drill press, 28" Aurora, b. g., p. f., sliding head, like new.
 Millers, No. 3A B. & S. heavy universal, complete, latest type, like new.
 Millers, No. 2A B. & S. universal, complete, latest type, like new.
 Millers, No. 2 B. & S. universal, complete, latest type, like new.
 Planers, 24"x24"x6" Gray, 2 head, latest type, like new.

FOR SALE BY

Jones Machine Tool Co., 435 E. Pearl St., Cincinnati, Ohio

ENGINE LATHES.

14"x 6" Whitcomb, q. c.....	\$ 400.	24"x16 S. & B. l. c.....	\$ 800.
16"x 8" Prentice, geared head.....	850.	26"x12" Advance, q. c.....	975.
18"x 8" American, q. c.....	495.	36"x10" L. & D., l. c.....	875.
21"x10" LeBlond, q. c.....	900.		

MILLING MACHINES.

No. 2 Cincinnati plain.....	\$ 575.	No. 3 B. & S. plain.....	\$ 900.
No. 3 Cincinnati plain.....	600.	No. 2 Hendey universal.....	1150.
No. 4 Cincinnati plain.....	1200.	No. 3H LeBlond universal.....	1650.
No. 3 K. & T. plain.....	900.		

MISCELLANEOUS.

Drill, 4' Fosdick radial.....	\$ 800.	Press, Bliss No. 20 o. b. i.....	\$ 400.
Drill press, 24" Barnes.....	200.	Press, C54 Ferracute, horning.....	400.
Drill press, 21" Superior.....	110.	Press, No. 744 Bliss s. s., 4" str.....	875.
Grinder, No. 23 B. & S. cyl.....	900.	Screw mche., 14" Drees, hand.....	200.
Grinder, No. 60 Heald, cyl.....	1300.	Shaper, 24" Cinti crank.....	900.
Planer, 32"x10", 2 heads.....	1100.	Shaper, 16" Smith & Mills.....	385.

Send for our complete Stock List

FOR SALE BY

Frank Toomey, Inc., 127-131 N. Third St., Philadelphia, Pa.

Machine Tools.

LATHES.

42" Pond car wheel, motor drive.....	17"x 8" Sidney, d. b. g., q. c., new.....
36"x16" Sidney, d. b. g., q. c., new.....	16"x 8" Monarch, d. b. g., q. c., used.....
25"x14" Sidney, d. b. g., q. c., new.....	15"x 6" Sidney, d. b. g., q. c., new.....
19"x 8" Sidney, d. b. g., q. c., new.....	13"x 5' 6" Carroll, s. b. g., p. c., new.....

SHAPERS AND PLANERS.

24" Potter & J. crank shaper, used.....	24"x24"x8" Hendey planer, 1 head.....
14", 16", 20", 24" Steptoe shapers, new.....	24"x24"x6" Pease planer, 1 head.....
36"x38"x10" Cincinnati planer, 3 heads, motor.....	16"x16"x42" Walter planer, 1 head.....

MILLERS.

No. 4 Brown & Sharpe, plain, used.....	No. 2 Putnam, universal, used.....
No. 4 LeBlond, plain, used.....	No. 1 Dow, plain, new.....

DRILLING MACHINES.

48" American, pl. rad., sp. box, used.....	21" Superior, b. g., p. f., new.....
36" Hamilton, pl. rad., cone dr., used.....	20" Buffalo and Champion, b. g.....
32" Superior, s. h., b. g., p. f., new.....	16" Canedy-Otto hi-speed, used.....
28" Superior, s. h., b. g., p. f., new.....	4-spindle Superior hi-speed, used.....

MISCELLANEOUS.

Bolt cutters, Greenfield, 1 1/2 and 2" new.....	Pipe machines, 2", 4", 6" Oster, new.....
Boring mill, 42" Bullard, vertical.....	Pipe machine, 8" Loew, used.....
Boring mill, 3" bar, Binsse, hor.....	Press, hyd., Watson & S., 30 tons.....
Grinder, 10"x36" Norton, plain, used.....	Slotter, 10"-12" Dill, used.....
Grinder, No. 1 Fraser, univ., new.....	Turrets, Bardons-Oliver Nos. 1, 6 w. f.....
Hack saws, 6x6 & 9x9 Peerless, new.....	Turrets, Warner & S. Nos. 4, 6 w. f.....
Hammer, st., 1500 lb. Bement, s. leg.....	Turrets, Gisholt 21".....
Keyseaters, Nos. 2 & 4 Catlin, used.....	Turrets, Gridley 4-spindle, 2 1/2".....

SECOND-HAND MACHINERY.

FOR SALE BY

The Sebastian Lathe Company, - - - Cincinnati, Ohio

SEBASTIAN LATHES

These lathes have all been used in our own shop.

15"x 6' plain rest, cone head.....	\$ 275.
15"x 6' compound rest, cone head.....	325.
15"x 8' gap bridge, cone head, compound rest, used 30 days.....	450.
15"x 5' compound rest, almost new.....	375.
15"x 4 1/2' compound rest, almost new.....	390.

These are cash prices f. o. b. cars Cincinnati

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

16"x 8' Lodge & Shipley, compound rest, patent head.	24"x 14' Boye & Emmes, c. r., 3-step cone.
16"x 6' Hamilton.	24"x 22' Union Machine Co., c. r.
17"x 8' LeBlond, 3-st. cone, hvy. duty.	

TURRET LATHES AND SCREW MACHINES.

1" Millholland, plain head.	No. 2-A Warner & Swasey g. h. turret lathes, (2).
2 1/2"x 10" Millholland, g. f. h., p. f.	No. 3-A Warner & Swasey g. h. turret lathe, (2).
15" Garvin, g. f. h., p. f.	2"x 24' Jones & Lamson g. h. flat turret lathe.
14" Lodge & Davis, plain head.	No. 00 Brown & Sharpe auto, (8).
24" Davis turret boring and chucking lathe, with forming rest.	No. 0 Brown & Sharpe auto. (7).
22" Lodge & Shipley heavy duty turret boring lathe.	No. 2 Brown & Sharpe auto. (3).
14" Acme screw mche., p. f. to tur., (3).	1/2" to 3" Model A Cleveland auto.
26" Gisholt heavy duty turret lathe.	

DRILLING MACHINES.

Single spdl. upright sensitive, (2).	4 spindle Foote-Burt, adjustable head.
24" Baker, hvy. duty, sta. head.	

MILLING MACHINES.

No. 1 U. S. hand, 3-st. cone., c. s.	No. 3 Brown & Sharpe, plain, taper nose.
No. 15 Garvin plain, b. g.	No. 6 Becker, vert., rotating table.
No. 22 Garvin, vertical spindle.	12" Pratt & Whitney, horiz., auto.
No. 1 Cincinnati plain.	

GRINDERS.

No. 10 Cochrane-Bly auto. bench saw filing machine.	Gisholt tool grinder.
12"x 66" No. 4 Landis univ., complete.	No. 14-16 Bealy, wet ring wheel.
No. 1 Brown & Sharpe, univ.	6"x 18" Landis, plain, single pulley drive.
Type "DE" Hisey-Wolf internal.	

HAMMERS AND RIVETERS.

Coffman post pwr. dr. hammer 25 lbs.	11 1/2" thr. Grant rivet spinning mche.
Cady belt drop hammer, 100 lbs.	No. 203 Grant rivet spinning mche.

METAL CUTTING TOOLS & SQUARING SHEARS.

Excelsior power hack saw.	Higley cold saw.
12" Burke metal cold saw.	No. 15 1/2 Higley cold saw.

PUNCH PRESSES.

No. 11 Badger, hand.

GEAR CUTTERS.

26" No. 3 Brown & Sharpe auto., (2).	No. 13 Brown & Sharpe auto., (2).
60" Eberhardt, spur.	

MISCELLANEOUS.

Boring mche., 23" swing, Star horiz.	Press, No. 65-A Consol., s. s., grd.
Boring mill, 34" Colburn.	Press, D-301 Ferracute redrawing and trimming.
Brake, 36" P. S. & W. cornice brake, 20 gauge capacity.	Radial drill, 3" Gang, speed box.
Crane and hoist, Canton No. 3.	Tapper, 1/2" Burke, bench.
Planers, 22"x 22"x 5' Putnam, 1 hd., (3).	Tappers, 1/2" Rickert-S. horizontal.
Polishing lathes, City Machine Co.	

SECOND-HAND MACHINERY

FOR SALE BY

Tranter Manufacturing Co.,

Gear cutter, B. & S. No. 13 univ.
Grinder, Blount 20", wet tool.
Grinder, Hamilton 20", wet tool.
Hack saw, Millers Falls, 6x6.

105 Water St., Pittsburgh, Pa.

Lathe, turret, Bordon, b. g.
Lathe, Wormer 12", speed.
Lathes, Drees & Mueller, b. g., (7).
Turret screw lathes.

FOR SALE BY

The Enterprise Machinery Co.,

Boring mill, 48" vertical.....\$ 700.
Drill, 24" L. & D., b. g., p. l. 200.
Drill, electric brst., Willey 1"
845..... 65.
Drill, 24" Barnes, b. g., p. f., hvy. 150.
Grinder, Landis 17x30, 90% 825.
Gr. wet 24" pump dbl. 8150.sgl. 100.
Grinder, Landis No. 11..... 450.
Hammer, helve, 25 lb. 185.
Keyseater, Davis No. 2, b. g. 150.
Lathe, 28"x14" Rahn-Carp.,
heavy chuck, fine condition.. 950.
Lathe, 106" tr. b. g. heavy..... 750.

28 S. Clinton St., Chicago

Lathe, 24x10 New H., semi q.c. \$ 550.
Lathe, bench, Davis, new sl.
r, c. s. motor..... 225.
Lathe, 16"x6" Am. q. c., taper. 375.
Punch press, No. 3 1/2 o. b. i. 290.
Punch press, bench, new..... 85.
Punch, sh. & rod c. 1"x1/2" 250-350.
Roll. 20" Wickes, 11/16 drop end 4200.
Screw machines, Foster No. 1,
8290; No. 2 8345; No. 3..... 350.
Shaper, Walcott 20", d. b. g. hvy. 625.
Tur. l. J. & L., 2 1/2x24, 85% 600.
500 other tools. Write us.

FOR SALE BY

Frank H. Parker Company,

First Nat'l Bank Bldg., Chicago, Ill.

Air compressor, 8"x12" double
vertical.....\$ 500.
Air receiver, 4'x10', new..... 250.
Bending roll, 8', with 4" rollers 450.
Boring mill, Binsse, 3" bar..... 1800.
Boring mill, car wheel, 48"..... 800.
Boring mill, 60" Niles horiz. 7500.
Brake, 8" for No. 8 gauge..... 1200.
Bucket, 1/2 yd. orange peel..... 500.
Bulldozer, No. 4 W. & W. 1200.
Crane, 2 ton, hand traveler..... 150.
Derrick, 10t., stiff leg, 40' broom 600.
Drill press, 24" back geared..... 150.
Drill, radial, 3' Gang..... 800.
Engine, oil, 15 h. p., F. M. 150.
Grinder, 30" swing, 22" centers 600.
Grinder, No. 60 Heald cylinder 1700.
Hammer, 600 lbs. steam..... 700.
Hoist, 5 ton Y. & T. triplex..... 150.
Lathe, 8"x48" Barnes..... 150.
Lathe, 14"x8' q. c. g., t. a..... 450.
Lathe, Gisholt turret 21"..... 600.
Lathe, 26"x12" Walcott, q. c. g. 1000.
Lathe, 20"x12", c. r., t. a..... 700.
Lathe, 28"x10" Niles, d. b. g. 800.
Lathe, 28"x16" Fifield, c. r., s. s. 500.
Lathe, 60"x30" Niles, fair..... 1600.
Lathe, pulley, 24" Streit..... 600.
Lathe, pulley, 38" Streit..... 1100.
Lathe, Marvel, 4"x48" L. & S. 1200.
Milling mche., No. 0 Cin. plain 300.
Milling machine, No. 3 Brown
& Sharpe univ. 1700.
Milling mche., No. 2 Cin. pl. 800.
Milling mche., No. 4 Cin. pl. 1200.

Milling mche., No. 5 B. & S. pl. \$1500.
Milling mche., Burke hand..... 140.
Motor, 50 h. p., a. c., G. E., 440 v. 450.
Planer, 30"x30"x10', 1 head..... 400.
Planer, 24"x24"x5', 1 head..... 700.
Press, arbor, 50 ton..... 125.
Press, double crank, 50 ton..... 800.
Press, No. 302-B Toledo, b. g. 900.
Press, No. 2 Consolidated, o. b. i. 300.
Press, No. 924-E Toledo..... 2700.
Press, 7' bet. housings, dbl. cr. 4000.
Punch, 30" throat, 1 1/2" in 1 1/2" 2000.
Screw mche., B. & S. No. 2, hand 600.
Shaper, 12" crank, complete..... 200.
Shaper, 20" crank, Smith..... 500.
Shaper, 28" crank, G. & E. fair 700.
Shear, 16" for 3/16", with 16" gap 2000.
Shear, 30", for No. 11 gauge &
15" gap..... 700.
Shear, Cleveland, with 15" knife 800.
Shear, Lennox, 4", bevel..... 700.
Slotter, 24" Sellers..... 1100.
Sprue cutter for foundry..... 90.
Steel, 1 1/2"x1 1/2"x18" New Mild, 3c
per lb.
Steel, tool, 3" up to 10", all new,
10c per lb.
Tumbling barrel, 26x36x72..... 400.
Welder, spot, 15 k. w., Winfield 500.
Lot of brand new Government sur-
plus cars, axles, bolts, dies, cut-
ters, drills, reamers, lathe bits,
collets, chucks, bearings, counter-
shafts, belts, gears, furnaces,
sprockets, etc., etc., etc.

SECOND-HAND MACHINERY

FOR SALE BY

The Machine Tool Sales, - - 549 Washington Blvd., Chicago

Bending roll, 10', 14 ga.....	\$ 600.	Lathe, 18x 8 Lehman, q.c., b. g.	\$550.
Bolt cutter, 1½", sgl. hd.....	230.	Lathe, 21x12 Prentiss.....	400.
Brake, 10' Keene, 12 gauge.....	450.	Miller, No. 4 Cincinnati plain	1050.
Brake, 8' 10 ga. Chicago.....	675.	Miller, No. 5 Brown & S. pin.....	1200.
Drill, 20" Milwaukee, w. & l.	90.	Planer, 42x42x12 New Haven..	980.
Drill, 20" Superior, b. g., p. f.	120.	Screw machine, Foster No. 1.	265.
Drill, 28" Prentice, slid. hd.....	215.	Screw machine, Foster No. 2.	325.
Grinder, No. 60 Heald, cyl.....	1300.	Screw machine, 1" Southworth	275.
Grinder, 5x18 Ott, cylindrical..	800.	Shaper, 20" Walcott, b. g.....	590.
Grinder, Besly, 26" discs.....	215.	Shear, 10' Niagara, 16 ga.....	775.
Keyseater, No. 0 M. & J. ½"	175.	Shear, 10' Ohl, ½" cap.....	775.
Lathe, 16x 6 American, gd. hd.	500.	Shear, 36" Niagara, pwr., 14" ga.	375.

FOR SALE BY

A. D. White Machinery Co., - 108-114 N. Jefferson St., Chicago

ENGINE LATHES.

14"x 6' Smurr & Kamen.	20"x 8' Reed, motor driven.
18"x 7' Chard, d. b. g., p. c.	22"x10' Davis, d. b. g., q. c.
18"x 9' Bell, d. b. g., p. c.	32"x10' Pond, s. b. g., p. c.
20"x 8' Hamilton, d. b. g., s. q. c.	34"x10' Putnam, s. p. g., p. c.
20"x 8' Lodge & Shipley, grd. hd.	38"x14' Fifield, s. b. g., p. c.
20"x 8' Reed, s. b. g., p. c.	

MILLING MACHINES.

No. 0 Rockford, plain.	Model AB Becker, vert., motor dr.
No. 25 Hecker, horizontal.	Type "A" Briggs (2).
No. 1 Newton slab.	

DRILL PRESSES.

20" Mechanics, friction.	2 spindle Guarantee, h.s., b. b.
26" Barnes, sliding head.	4 spindle Reed sensitive, ½" cap.
28" Barnes, sliding head.	24" No. 24 Foote-Burt heavy duty.
36" Aurora, sliding head.	2 spindle 24" Barnes, all grd. gang.

PUNCH PRESSES.

No. 0 American Can.	19" throat geared punch.
No. 8 & No. 11 Bliss auto. button presses.	New Swaine o. b. l. presses Nos. 27, 29, 31, 33, 35 and 37.

TURRET LATHES AND SCREW MACHINES.

No. 3 Foster, plain head.	No. 3 Stecher, hand, (4).
20"x5' Bridgeport, (2).	16"x5' Dreses Fox.
20"x8' Fay & Scott universal.	18"x6' American Fox.
22"x5' Reed.	18"x6' Springfield Fox.
21" and 24" Gisholts.	7/16" Cleveland, ratchet feed.
3x36" Jones & Lamson.	¾" Cleveland, semi-auto.
1½"x10" Milholland.	¾" Cleveland, friction.
14" Biggs (2).	¾" Cleveland, jigger.
No. 1 Garvin, hand, (4).	¾" Hartford, (2).
No. 1 B. & S. auto ½" (2).	1" Cleveland, jigger.

BOLT CUTTERS AND PIPE MACHINES.

1½" Acme, double head.	4" Saunders (2).
3½" Acme single head, (2).	8" Eaton, Cole & Burnham.
4" Acme single head.	

MISCELLANEOUS.

Blower, No. 7 Sturtevant, high press.	Grinder, Springfield, 2-wheel wet.
Boring inch., 2½" bar, Binsse horiz.	Grinder, Leland & F., wet.
Gang splitter, takes 21" sheets.	Planer, 30"x30"x10' Pond, 1 head.
Gang splitter, takes 29½" sheet.	Profiler, 2 spindle Putnam.
Gas engine, 35 h. p. Columbus.	Riveter, ½" Shuster.
Gas engine, 55 h. p. Bruce-McBeth.	Saw, No. 5½ Nutter-Barnes.
Grinders, No. 2 Woods tool & cutter	Screw slotter, Garvin hor. 3/16 to ½".
Grinder, No. 2 Oesterlein tool & cut.	Tapper, No. 2 Garvin, auto.
Grinder, 10x30 Landis plain.	

SECOND-HAND MACHINERY

FOR SALE BY

J. Bleser Manufacturing Co.,

Adding mchc., 9-column Burroughs.
Chain hoists, Wright 2-ton h. a., new.
Cranes, Whiting overhead, hand pwr.
Crucibles, Nos. 60 and 70, new.
Crucible furnaces, Fisher, fuel oil.
Drills, 20" Barnes and Excelsior.
Drill, bench, with motor, new, #80.

Springfield, Ill.

Drills, 34" and 24" Barnes, sliding hd.
Lathe 17" LeBlond, rapid pwr., q. c.
Lathe 20"x8" Monarch, q. c.
Millers, hand, No. 3 Burke
Oil tank, 8' dia x 27' long, 9000 gal.
Sand riddle, Champion, and motor.
Snap flasks, Arcade 10x16x4Cr3D.

FOR SALE BY

Brownell Machinery Co.,

Boring mill, No. 32 Lucas, motor dr.
Boring mill, No. 1 Beaman & Smith.
Drill, 24" Prentice, sliding head.
Drill, 25" Snyder, sliding head.
Drill, 29" Hoefler, sliding head.
Drill, 1-spindle Allen, b. b.
Drill, 3-spindle Reed Prentice.
Drill, 26" H & W. radial
Drill, 4' Fosdick radial, gear box.
Drill, 6' American radial, gear box.
Gear generator, 11" Gleason.
Gear shaper, No. 612 Fellows.
Grinder, 10"x50" Norton plain.
Grinder, No. 6 Bryant chucking.
Grinder, 20" Taylor Fenn water tool.
Grinder, Garvin hand feed surface.
Lathe, 12"x 5' Reed, c. r.

11-13 Eddy St., Providence, R. I.

Lathe, 13"x 5' Worcester, c. r.
Lathe, 16"x 8' Reed, r. & f.
Lathe, 20"x 8' Whitcomb-Blaisdell
Lathe, 21"x10' Roulsted, c. r., q. c. g.
Miller, No. 1-B Milwaukee univ.
Miller, No. 1 Garvin universal
Miller, No. 2-Y Brown & Sharpe pl.
Miller, No. 13 Garvin plain.
Miller, Briggs type A mfg.
Planer, 17"x17"x4' Whitcomb-B.
Planer, 22"x22"x5' Whitcomb-B.
Planer, 24"x24"x6' Whitcomb-B.
Planer 30"x30"x8' Whitcomb-B.
Shaper, 8" Boynton & Plummer.
Shaper, 15" Potter & Johnston.
Shaper 20" Kelly, b. g.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

1001-3-5 N. Sixth St.,

St. Louis, Mo.

LATHES.

18"x 8' Lodge & Shipley.
20"x 8' Lodge & Shipley.
19"x10' Springfield.
24"x12' Schumacher & Boye.
24"x14' Schumacher & Boye.

25"x16' Niles.
27"x18' Springfield.
33"x20' Draper.
34"x16' Putnam.

SHAPERS.

20" Gould & Eberhardt.
24" Gould & Eberhardt.

20" Wetherell, traveling head.

PLANERS.

24"x24"x 6' Liberty.
40"x36"x 8' Powell.

40"x40"x12' New Haven.

MILLERS.

No. 2 Rockford universal.
No. 9 Kempsmith plain.
No. 2 Brown & Sharpe universal.

No. 12 Kempsmith plain.
No. 3 Becker plain.
Owen duplex.

DRILLING MACHINES.

40" New Haven.
24" Foote-Burt.
16" Kern, high speed.

6' arm Prentice radial.
24" Aurora.
22" Barnes.

MISCELLANEOUS.

Boring and drilling machine, horiz.,
No. 2 Pawling & Harnischfeger.
Cold saw, 28" Q. & C.
Engine, Corlias, 12"x30", left hand.
Gear shaper, 36" Fellows.
Grinder, No. 60 Heald.
Grinder, 5"x18" Ott plain.

Grinder, 8"x30" Modern plain.
Hammer, 1100 lb. Morgan, steam.
Marking machine, Mathews.
Screw machines, 14" Foster.
Slotter, 6" Sellers.
Turret, 16" Bardons & Oliver, univ.
Turret, No. 4 Wood.

SECOND-HAND MACHINERY

FOR SALE BY

The O'Brien Machinery Co.,

Bending rolls, 8", 8" and 6" diam.
Bolt cutter, 1" Acme, single head.
Bolt cutter, 1" Acme.
Bolt cutter, 3" Acme, single head.
Drill, 3/4 spindle Baker Bros. heavy duty upright.
Drill, Allen 5-spindle, high speed.
Drill, Allen 6-spindle, high speed.
Drills, Moline heavy duty hog, (2).
Gear cutter, 36" Whiton.
Hammer, 500 lb. Beaudry.
Hammer, 800 lbs. Bement-Miles, double frame steam.
Hammer, 1200 lbs. Bement-Miles, double frame steam.
Lathe, 8"x108" Fitchburg Lo-Swing.
Lathe, 16"x17" Pratt & Whitney.
Lathe, 18"x9" Lehman.
Lathe, 20"x9" Lehman.
Lathe, 20"x14" Powell.
Lathe, 23"x12" Blaisdell.
Lathe, 24"x14" Niles.
Lathe, 30"x21" Putnam.
Lathe, 48"x16" Sellers.

119 N. Third St., Philadelphia, Pa.

Lathe, 85"x18" Bement.
Miller, No. 34 Fox.
Miller, No. 3 Becker vertical.
Pipe machine, 4" Oster.
Pipe machine, 2" Cox, heavy duty.
Pipe machine, 2" Oster.
Pipe machine, 6" Oster.
Pipe machine, 8" Curtis & Curtis.
Planer, 32"x30"x10" Niles, milling head as well as planer head.
Planer, 50"x50"x18" Betts.
Presses, approximately 50, assorted sizes, Waterbury-Farrell Foundry, weights approx. 2,000 to 5,000 lbs.
Presses, Toledo No. 53 straight sided power, 34" stroke, (7).
Press, No. 47 Niagara, deep throat.
Shaper, 16" Hollingworth, back grd.
Shaper, 18" Hollingworth.
Shapers, 2-12" & 2-15" Springfield.
Shapers, 12", 20" and 24" Juengst.
Slotter, 12" stroke Bement.
Turret lathe, No. 64 Bardon & Oliver, wire feed, cabinet base.

FOR SALE BY

W. P. Little Co.,

1616 Columbus Road, Cleveland, Ohio

LATHES.

14"x 6" LeBlond, c. r.
14"x 6" Blaisdell, c. r.
14"x 6" Von Wyck, p. r.
16"x 8" LeBlond, gap, c. r.
20"x10" Kahn-Mayer, c. r.

10"x108" Lo Swing.
20"x10" Lodge & Davis, p. r.
24"x15" New Haven, c. r., t. a.
26"x 9" Bridgeford, d. b. g., & q. c. g.
30"x10" plain turning.

SHAPERS.

16" Barker, b. g., crank.
16" Walcott, b. g., crank.
24" G. & E., single pulley drive.

16" Juengst, friction.
20" Kelly, b. g., crank.

DRILL PRESSES.

Kern high speed.
No. 1 Avey high speed.
20" Prentice, w. & l.
24" Aurora, b. g., p. f., s. h.
28" Aurora, b. g., p. f., s. h.

2-spindle Reed sensitive.
3-spindle Fox sensitive.
4-spindle Fox sensitive (4).
3-spindle 20" Barnes.
24" heavy duty.

CYLINDER GRINDERS.

Madison cylinder grinder.
U. S. hand millers, (2).
No. 1 Brown & Sharpe universal.
No. 5-C Becker miller.

No. 23 B. & S. cylinder grinder.
MILLING MACHINES.
No. 4 Hendey Lincoln pattern.
Reed, Lincoln pattern (2).

PUNCH PRESSES.

No. 1 Toledo, inc. (3).
No. 65 Consolidated.

18" throat Excelsior, 1/4" cap.
No. 87 Zeh & Hanneman.

DIE SINKING EQUIPMENT.

Jackson die sinking mche.

No. 2 P. & W. die sinking mche.

MISCELLANEOUS.

Broach, No. 3-A Lapointe.
Furnace, No. 3 Frankfort.
Screw machine, No. 4 B. & O.
Turret, 18" W. & S.
Turret, 18"-30" Gisholt, gap.

Slotter, 8".
Spline miller, 4" P. & W.
Tapper, 6/16" Rickert & Shafer.
Tapper, No. 1 Garvin automatic.
Blower, No. 6 Sturtevant.

We buy Used Machinery. What have you to sell?

SECOND-HAND MACHINERY

FOR SALE BY

A. M. Stoehr Machinery Co., 844-846 North Wells St., Chicago, Ill.

Only Used Machinery of the Better Class.

Blue printing & drying mche., continuous, 42", 220 volt, d. c.
Butt welders, No. 6, No. 9, No. 10A6 and No. 10A7 Thompson.
Cold saw, No. 5½ Nutter-Barnes.
Compressors, steam & belt drive.
Drill press, 36" Cin'ti, b. g., sl. hd.
Drill press, Cin'ti univ., ½" cap.
Drying machines, no dust.
Gear hobber, No. 3 Barber-Colman.
Grinder, univ., Dumore electric.
Grinder, No. 10 Besly, disc.
Grinder, 48" Yates, knife.
Grinder, No. 16 Blanchard, vertical.
Grinder, No. 60 Heald, cylinder.
Lathe, 18"x8" Advance, q. c. g.
Lathes, 50 other sizes and makes.

Milling machines, Wisconsin hand, No. 3½ Fox, No. 25 Becker.
Oil extractor, 26" Troy, bot. disc.
Pipe mch., 6" Jarecki, motor drive.
Press, No. 92½-E Toledo, dbl. crank.
Press, 800 ton hyd. straightening.
Press, 300-ton hyd. tire or wheel.
Punch press, No. 4 Am. Can., o. b. i.
Punch press, No. 3 L. & J., o. b. i.
Shear, power square, 66" No. 316 Bliss, 18" gauge.
Shear, power square, 96" No. 196 Niagara, 18 gauge.
Shear, bar, New Doty, 3x½" cap., pwr.
Shear, pwr. spli'g., Niagara, 1/16 ga.
Shear, rotary, Niagara, 10 gauge.
Tapping mch., Tuttle, ½" cap.

We have other machinery; send in your list.

FOR SALE BY

E. L. Esley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.

DRILL PRESSES.

24" No. 25 Foote-Burt hvy. duty. | 32" W. F. & John Barnes, sl. head.
4 sp. Allen high speed b. b. drill. | 2½" Fosdick plain radial.

LATHES.

18"x8" Whitcomb Blaisdell, q. c. g. | 21"x8" Cisco, q. c. g., d. b. g.
18"x10" Prentice, q. c. g. | 21"x10" South Bend.
20"x14" Putnam. | 30"x14" Niles.

MISCELLANEOUS.

Boring mill, 60" Bullard vertical.
Gear cutter, No. 3 B. & S. auto.
Grinder, 12"x24" Modern plain.
Grinder, No. 1 Sellers, pat. tool.
Grinder, No. 16, 10"x72" B. & S. plain cylinder.
Grinder, 12x48" Cincinnati, cyl.
Grinder, P. & W. vertical surface.
Grinders, No. 10 Besly 18" dbl. disc. (3).
Hammer, 800 lb. W. W., board drop.
Hammer, steam, 800 lb. Massillon.
Miller, No. 33 Kempsmith prod. type
Miller, No. 2 Milwaukee universal.
Miller, No. 3 Burr, keyseat, routing attachment.
Planer, 36"x36"x8" Betts.
Planer, 36"x36"x12" Rockford, new.
Planer, 36"x36"x12" Woodward Powell.
Planer, 62"x56"x26" Gray, 2 heads.
Punch pr., No. 4 & 4½ Niagara, o. b. i.
Punch press, No. 4 Toledo, o. b. i.
Punch pr., No. 57 Toledo, st. sd., gd.
Punch press, No. 76 Toledo, o. b.
Punch pr., No. 38 Niagara, geared.
Punch pr., No. 37½ Bliss, pl., st. sd.
Punch pr., No. 61 Bliss, o. b., reduc.
Saw, Smith & Post cold saw.
Screw machine, No. 6 B. & S. semi-auto, hand.
Screw mch., 2"x2½" Cleveland auto.
Shear, No. 252 Niagara, power.
Shear, 72" Loy & N., pwr., ½" cap.
Turret lathe, No. 2 Pratt & W.

HOW

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Used Machinery

For Sale By

Vonnegut Machinery Co.

Indianapolis, Indiana

1—36"x22' Lodge & Shipley Engine
Lathe, Geared Head, S. P. D., 14'
6" between centers.

1—36"x18' LeBlond High Duty Engine
Lathe, adaptable direct motor
drive only.

1—42x42x22' Flather Planer, 3 heads.

1—48x48x22' Cincinnati Planer, four
heads (practically new).

1—30 ton Case Crane, 5 ton auxiliary
lift, 75' span, four motors (practi-
cally new).

1—No. 55 Toledo Punch Press.

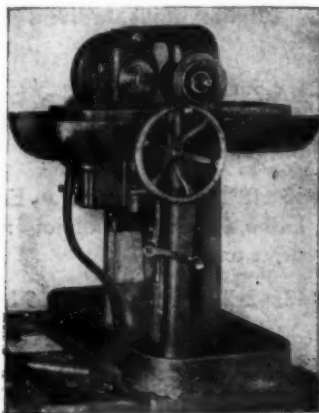
2—No. 74 Toledo Punch Presses.

LUCAS MACHINERY SERVICE

TO CLOSE THEM OUT WE OFFER:

**20—Type "A" Briggs Milling Machines
At \$275 each, Subject to Change in Price**

Each one is in fine condition and has counter-shaft, wrenches, and a new arbor. New oil pumps will be furnished at \$20.00 each extra.



DIMENSIONS

Traverse feed of table.....	16"	Arbor for No. 11 B. & S. taper	
Table Surface	24"x8"	Spindle driving gear.....	14"x2"
3 T slots for 5/8" bolts"		Ratio of gearing	4 to 1
Distance between housings ..	12 1/4"	Weight.....	2,300 lbs.
Cutter space on arbor.....	10"	Floor space	42"x52"
Maximum distance table to center of arbor	12"	8 changes of feed to table.	

J. L. LUCAS & SON, Inc.

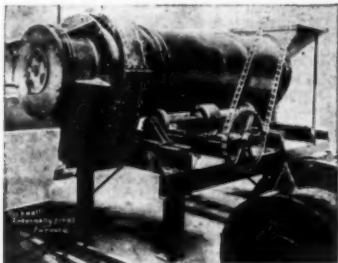
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BRIDGEPORT, CONN.

Rockwell Rotary Heating And Annealing Furnaces

Size No. 152

Here is an unusual opportunity to get a furnace that is well worth having, at a bargain price. A recent large purchase enables us to make this offer



5 No. 152 Rockwell Rotary Annealing Heat Treating Furnaces

Length of furnace shell 8'
Dia. inside furnace shell 30"
Dia. inside lining 18"
Pitch of thread 8½"
Length over all 12'
Height to center of charging spot
4' 10"

Height over all 6' 6"
Width over all 5' 10"
Weight complete 10,000 lbs.
Oil consumption per hour, U. S.
Gals. 4
Work capacity per hour, 1000 lbs.
Horsepower required, 1

Price Each \$600

F. O. B. BRIDGEPORT, CONN.

J. L. LUCAS & SON, Inc.

3 Fox Street,

BRIDGEPORT, CONN.

DRILLS

No. 210 14" 2-spindle Rockford.
 No. 215 14" 3-spindle Rockford.
 15" Barnes Upright.
 20" Superior Sliding Hd. Tap. Attach.
 20" Weigle.
 21" Superior b. g. p. f.
 22½" Barnes.
 23" Snyder b. g. p. f.
 24" Superior b. g. p. f.
 28" Superior b. g. p. f.
 32" Superior b. g. p. f.
 16" Sipp Hi-Speed p. f.
 16" 2-spindle Sipp.
 12" Wiley Bench Motor Driven.
 Fay Horizontal Bench.
 Overland Horizontal Bench.
 5-spindle Detroit Automatic.
 No. 2 Berlin Bracket Drill.
 No. 1 P. & W. 2-spindle Gun Barrel.
 2-spindle Diamond Gun Barrel Reaming.
 No. 1 Barnes Double End Horiz. Radial.
 No. 2 Barnes Horiz. Boring, Drilling & Tapping
 No. 1 Foote-Burt 3-spindle Adj. Drill.
 No. 1 Foote-Burt 2-spindle Adj. Drill.
 No. 00-SS Garvin Duplex Horiz.
 No. 2 Foote-Burt 4-spindle Rail Type.
 4-spindle Foote-Burt Adjustable.
 8-spindle Foote-Burt Rail Type.
 22½" Barnes 4-spindle Gang.
 No. 1 Baush 16-spindle Multiple.
 No. 3 Fox 20-spindle Multiple.
 No. 25 Natco Multiple 20-spindle.
 No. 37 Natco Multiple 20-spindle.
 No. M-4 Natco Multiple 20-spindle.
 No. 30 Natco Multiple 42-spindle.
 No. 60 Natco Multi 3-way Driller.

**Get our prices on these Drills—
 They have been reduced to bed rock**

We also have a big list of bargains in Millers,
 Lathes, Grinders, Planers, etc.

What do you need? Write us

Peninsular Machinery Co.
429 E. Jefferson Ave., Detroit, Mich.

We Need The Money And These Prices Will Get It

NEW TOOLS

16"x6' Sidney double back gear, quick change gear Lathes, H. S. & C. R.; all regular equipment; each.....	\$ 525.
26"x12' 10" Wickes double back gear, quick change gear Lathe, with taper attachment; all regular equipment, Factory price \$2750; this one.....	2250.
20" Champion, wheel and lever feed Drills; 4 only. Each	140.
Wilmarth & Morman B. Pt. New Yankee Drill Grinder; cap. ¼" to 2½". Factory price \$180; price.....	125.
Fox No. 1B Hand and Power Feed Miller, with arbor. Fac- tory price \$633; price.....	475.

SLIGHTLY USED TOOLS

No. 20 Excelsior Machine & Tool Co. Power Punch, cap. ¼" in ¼", 20" throat. Price.....	\$ 200.
No. 3 Baush 27-spindle multiple drill, rectangular head 20x40". Price.....	1500.
Warner & Swasey No. 4 Universal Turret Lathe, with cross slide carriage with power longitudinal and cross feed, power feed to turret, with tools and chuck. Price.....	1000.
Wood No. 4 plain head Tilted Turret Lathe with hand feed to turret. Price.....	450.
16" Smith & Mills back geared Shaper, with vise and c. s.	650.
3' American Sensitive Radial Drill, with tapping attmt.....	600.
All these used tools are latest models and about 95% condition.	
50 HP General Electric, Type KT Motors, 3 phase, 60 cycle, 220 volt, speed 1200 RPM; with compensators, pulleys and bases. Each.....	\$ 500.
40 HP, as above. Price.....	450.

Above motors slightly used and 95%.

New Advance single-phase motors, 110-220 volt, speed
1750 RPM:

¼ HP with pulley.....	\$ 40.
½ HP with pulley.....	50.
1 HP with pulley and rails.....	70.
2 HP with pulley and rails.....	95.

All subject to prior sale

Brown Machinery Company

2323 North Ninth St.,

St. Louis, Mo.

A Few Items of Our Large Stock

LATHES.

- | | |
|---|-------------------------------------|
| 4—Gisholt Mfg., 6" hollow spindle. | 24" x 10' Lodge & Shipley, q. c. g. |
| Conradson, grd. head, 28" x 14'. | 16" x 7' Lehmann, q. c. g., taper. |
| Bridgeford, grd. head, 27" x 14'. | 16" x 6' Whitcomb-B., q. c. g. |
| 2—Fitchburg Lo-Swing. | 16" x 6' Bradford. |
| 2—Bridgeford Axle turning, d. e. | 13" x 4' South Bend. |
| 1—Bridgeford 27" x 9", d. b. g., q. c. g. | 14" x 8' Flather, plain rest. |

MILLERS.

- | | |
|-----------------------------------|---------------------------------|
| Kemp Smith No. 1 plain. | Briggs type B, 73" trav. table. |
| Becker No. 23 plain. | Steptoe plain. |
| 2—Hendey No. 4 Lincoln type. | Ohio No. 35 universal. |
| 2—Fox No. 3½ automatic. | Ohio No. 28 plain. |
| 5—Bristol No. 6 hand feed. | Becker 7H, Lincoln type. |
| Becker s. d. vert., rotary table. | Foster thread millers. |

DRILLING MACHINES.

- | | |
|--------------------------------------|---------------------------------|
| Allen, h. s., b. b., 4-5-6 spindle. | 24" Sibley, s. h., b. g., p. f. |
| Henry & W., h. s., b. b., 2 spindle. | Milwaukee 21", w. & l., new. |
| Barr 14" 2-sp., Rockford 14" 1-sp. | 20" Silver, b. g., p. f. |

GRINDERS.

- | | |
|--------------------------------|-------------------------------|
| 2 Fitchburg B, 12" x 36" cyl. | 2—Detroit centerless. |
| Yates No. 275, 36" and 48". | Wells universal—Emery Stands. |
| Diamond and No. 2 Am. surface. | Landis cylindrical. |

MISCELLANEOUS.

- | | |
|------------------------------|--------------------------------|
| 24" Auto. Tool Works Shaper. | Lea-S. hi-speed and hack saws. |
| Rockford Horiz. Boring Mach. | Davis 6" & H&R 4" Cut-off Mch. |
| Foster Screw Machine. | Toledo Spot Welder. Presses. |

McDonald Machinery Co. 1531-33 N. Broadway
ST. LOUIS, MO.

"Machinery is our Middle Name"

Wayne Rebuilt Machinery

**"Known by every user for
its Quality, and to be In-
variably as Represented."**

Over One Thousand Machines in stock—

Get our offerings to meet your needs.

Wayne Machinery Company
Fort Wayne, Ind.

Priced To Sell Now

BORING MILLS

100" Betts, 3 heads, like new.
76" Betts heavy, modern.
60" Niles-Bement-Pond, hvy., single pulley drive.
60" Bickford, standard, 2 heads, low price.

36" Bullard Vertical Turret.
8-24" Bullard Vertical Turret.
34" Horizontal Universal, belt driven.
4" Espen-Lucas Horiz., floor type.
3" Betts, Horizontal, knee type.

DRILLING MACHINES

8' Niles Plain Radial.
6' Baush, Plain Radial, like new.
6' Bickford, Semi-Universal Radial.

4-28" Aurora Upright, s.h., b.g. (new).
5' Niles-Bement-Pond, motor driven.
4' Gang, gear box drive.

DRILLS—Multi-Spindle

4—(NEW) Aurora 28", s. h., b. g., p. f., auto. stop.
6 spindle Baush, 1" capacity.
3 & 4 spindle Barnes, 30" gang.

2-sp. Foote-Burt heavy rail type.
4 & 6 spindle Rockford, auto. feed.
4 & 6 spindle Allen, sensitive.

LATHES

60"x20" Fifield, D. C. Motor Drive.
52"x22" New Haven triple geared, pulley drive.
60"x17" New Haven Pulley.
36"x14" Putnam triple geared.
36"x12" Pond triple geared.
30"x12" Johnson.

28"x18" Johnson.
20"x8" & 10" American.
20"x8" Lodge & Shipley.
14"x6" Mulliner tool room.
14"x8" Monarch.
12"x5" P. & W.
10"x4" Seneca Falls.

MILLING MACHINES

8—No. 5C Becker Verticals, new, price right.
No. 3 LeBlond, plain, high duty.
No. 5 Becker-Brainard Plain.
No. 2 Kemp Smith Universal.
50"x8" Ingersoll Slab.

No. 25 Becker Plain.
No. 2 Hendey Norton Plain.
No. 14 Hendey Norton Universal.
No. 2 Van Norman Duplex.
31"x5" Newton Vertical Slab.

PLANERS

84"x84"x13' Sellers, 3 heads, belt driven.
48"x48"x14' Powell, 4 heads, reversible motor drive, complete with electrical equipment.
48"x48"x16' Bement-Miles, 4 heads, belt driven.

42"x42"x12' Pond Machine Tool Co., 2 heads, belt driven.
36"x36"x12' Niles-Bement-Pond, 3 heads.
30"x30"x10' Flather, 2 heads, belt driven.
30"x30"x6' Gray, 3 heads, parallel dr.

PRESSES

No. 55 Adriance S. A.
No. 512 Bliss, triple action.

No. 1 Farrel straight side, 8" stroke.
D. D. 4 Ferracute, D. A., roll feed.

SHAPERS

2-16" Newark, box table and vise.
4-15" Smith & Mills, box table and vise.

4-15" Hendey, box table and vise.
3-48" Morton, extra hvy., draw-cut.
18" Fitchburg, traveling head.

MISCELLANEOUS

10' Bement Boiler Plate Rolls.
18" Betts heavy type slotter.
12" New Haven Slotter.
Sellers heavy Punch, 2" capacity.

No. 26 Buffalo Slitting Shear (new).
Newbold Rotary Shear, 4" cap.
10" Newton Slotter (new).

Graves Machinery Exchange

WAREHOUSE, MACHINE SHOPS and R. R. SIDING: Johnston Ave.
and Monitor St., Jersey City, N. J.; Phone Bergen 3139

OFFICES: Suite 482, 50 Church St., New York City; Phones Cortlandt 665-1643

SPECIALS Immediate Delivery

- 1-59 1/4 Toledo Straight Side Press, dbl. grd., 12" str., tie rod frame, weight 70,000 lbs., spring pressure attachment.
- 1-No. 167 Toledo Toggle, 34" bet'n. uprights; draws shell 10" high; dia. drawing punch 24" weight 58000 lbs.
- 1-59 Toledo Straight Side Press, double geared, 12" stroke, weight 50,000 lbs.
- 1-No. 75 Toledo Press, geared, weight 4500 lbs.
- 1-No. 666 Toledo Knuckle Joint Embossing Press, cap. 1,000 tons.
- 1-No. 27 Bliss Knuckle Joint Embossing Press, cap. 1,000 tons.
- 1-No. 14 Toledo Horn Press, fly-wheel type, table included.
- 1-No. 2-W Bliss Wiring Press.
- 1-No. 69-N Bliss Cam, fly-wheel.
- 1-No. 77 1/2 Bliss Straight Side, double grd., 6" stroke, tie rod.
- 1-No. 72 Consolidated Press.
- 1-No. 65 Consolidated Press.
- 1-No. 47 1/2 Bliss 24" Deep Throat Punch, weight 2650 lbs.
- 1-48" Ohls Multiple Punch, weight 9000 lbs.
- 1-24" Gould & Eberhardt Shaper.
- 1-No. 5 Williams & White Bulldozer.
- 1-84" Niagara Foot Squaring Shear.
- 1-10' Ohls Power Squaring shear, 1/8" capacity.

D. C. Oviatt & Co., 401 Garfield Bank Bldg., CLEVELAND, OHIO
Presses, Sheet Metal and Can Machinery.

Grand Rapids Specials

- Broaching machine, keyway, No. 4 Burr.
- Broaching machine, No. 2 J. N. LaPointe.
- Cut-off mch., No. 4 Nutter-B.
- Cut-off mch., No. 4 Cochrane-B.
- Drill, 26" Barnes, all-geared.
- Drill, 10-sp. Grand R. mult.
- Grinder, 6-A Bryant, chucking.
- Grinder, Norton universal cutter and tool.
- Grinder, Cincinnati universal cutter and tool.
- Lathe, 16" x 10' Schumacher-B.
- Lathe, 20" x 10' Schumacher-B.
- Marking mch., No. 3 Dwight-S.
- Pipe mch., No. 300-A Oster.
- Planer, 30" x 30" x 8' Pond.
- Press, arch, No. 164 Consolidated Press, double crank geared, No. 164 Consolidated.
- Profiler, No. 2-H Becker.
- Punch, mult., No. 3 Kane & R.
- Punch & shear, No. 54 Beloit.
- Radial, wall, 24" No. 51 Canedy-O.
- Radial, 3' Fosdick Holloway.
- Radial drill, 3' Dreses.
- Riveting hammer, No. 3-A High Speed, large throat.
- Sand blast outfits, A-6 Pangborn, (2).
- Screw mch., 2" Cleveland auto.
- Shaper, 14" Davis, crank.
- Shear, power sq., 96" Ohl, 16 ga.
- Spline miller, 4" P. & W.
- "Tilted turret" lathe, No. 3 Wood.
- Turret lathes, 2x24 J. & L.
- Turret lathe, 3x36 J. & L.
- Turret lathe, No. 3 B. & O.
- Turret lathe, No. 5 Foster.
- Wire weaver, Smurr & Kamen semi-automatic.

McMullen Machinery Company
"Everything in Shop Equipment" Grand Rapids, Mich.

DEPENDABLE TOOLS

Exceptionally Reasonable

BUY NOW

- 1—Rochester Floor Type Horiz. Boring Mill, 3 5 16" bar—real bargain.
- 6—No. 5 Cincinnati Plain Millers, rectangular arm, latest type, like new.
- 1—42"x26" American selective triple geared head Lathe, arr. motor dr.
- 2—48"x26" Lodge & Shipley selective tri. grd. hd. Lathes, arr. motor dr.
- 1—48"x16" Lodge & Shipley selective triple grd. head Lathe, motor dr.
- 3—36"x14" Lodge & Shipley selective tri. grd. hd. Lathes, arr. motor dr.
- 1—30x30x8" G. A. Gray Planer, 1 head. Excellent. Reasonable.
- 3—6x32 Norton Plain Grinders, overhead countershafts.
- 2—12x72 Norton Plain Grinders, overhead countershafts.
- 11—Pratt & Whitney No. 12 Profilers, excellent, very cheap.
- 1—No. 33 Lucas Horizontal Boring Mill.

8—New 3½x60" Fitchburg Lo-swing single carriage Lathe, each	\$ 650.
1—60"x26" Niles heavy duty, triple geared, cone drive Lathe	2500.
1—25"x12" LeBlond heavy duty Lathe, taper, excellent condition	1250.
1—52" King vertical Boring Mill, 2 swivel heads, slightly used	4500.
1—42" King vertical Boring Mill, 2 swivel heads	3350.
2—24" Bullard New Era Type Boring Mills, each	2000.
1—New 61" Bullard Maxi-Mill	6800.
2—New 54" Bullard Maxi-Mills, each	6000.
1—Slightly used 16x10 Ingersoll-Sergeant Air Compressor, cap. 700', belt driven	600.
1—56"x56"x16" Gray Planer, 2 heads on rail, 2 side heads, motor drive	6000.

- 1—24" Ohio back geared Shaper.
- 1—No. 11 Perkins Trimming Press.
- 1—Double End Industrial Punch and Shear, 1" through 1".
- 1—Single End Cleveland Punch and Shear, 2" through 2".
- 3—Model C Becker vertical Milling Machines.
- 1—36" Bickford Radial Drill, cone drive.
- 2—36" Flathead Gear Cutters.
- 1—3-A Cincinnati Gear Cutter.
- 3—No. 12 Barber-Colman Gear Hobbers.
- 1—No. 4 Williams & White Bulldozer.

The Empire Machinery Exchange Co., Inc.
 517-519 Newman-Stern Bldg., CLEVELAND, OHIO

Harris Brothers Co.

1475 W. 35th St., Chicago, Ill.

Turret Lathes and Screw Machines

24" Gisholt with 4 way turret tool post on carriage, through hex turret, on bed, with power rapid traverse, taper attachment, screw cutting 2 step cone, triple geared, 6 $\frac{1}{2}$ " hole in spindle (10).
21" Gisholt, same, 3 $\frac{1}{2}$ " bore.
24" Steinle, same (1).

28" Pond Rigid; same (2).
18" Gisholt, 6 $\frac{1}{2}$ " hole, screw cut'g (2).
Pratt & Whitney No. 1, Hand Screw Machine, 7/16" automatic chuck, capacity (6).
Gridley 3 $\frac{1}{2}$ " single spindle auto. (16).
Gridley 4 $\frac{1}{2}$ " single spindle auto.

Rolling and Corrugating Machines

1—Complete Rolling and Corrugating Mch., cap. 3" steel plates, rolls 24" diam., 72" between housings.

1—400 lb. Bloom, Lewis Foundry Machine Co., Squeezer, direct connected to steam engine.

Milling Machines

No. 6 Whitney Hand (10).
No. 22 Garvin, vertical.
No. 5 Becker, Vertical.
No. 3 Brown & Sharpe, Vertical.
Newton, 38" swing, with rotary table.
No. 5-C Becker Vert. (latest model), single pulley drive.
No. 6 Becker, same.
No. 3 Pedrick & Ayer, Universal.
No. 3 Brown & Sharpe, Universal.
No. 4 Brown & Sharpe, Universal.

Punch Presses

Ferracute D. G. G. No. 85 Straight Sided Single Action, Double Back Geared Punch Press, Friction Clutch Drive. Distance between Uprights 25". Area of Bed. R to L, 24"; F to B, 31". Stroke of Side 16". Ram Pressure, 70 tons. Weight about (each) 16,000 lbs. (2 machines).

Grinders

Ford Smith 9"x15" Plain.
Norton 10"x50" Plain.
Fitchburg 12"x36" Plain (3Mches).
Yankee 1 $\frac{1}{2}$ " Twist Drill Grinder.

Carwheel Lathes

48" Niles Double Head, 2 carriages.

Planers, Shapers and Slotters

48x48x16 Pond Planer, with 4 heads.
10" Putnam Vertical Slotter or Shaper with Compound & Rotary Power feed Table.

16" Betts—Same.
18" Niles—Same.
20" Niles—Same.

Miscellaneous

1000 lb. Lennox Friction Board.
1250 lb. Massillon Steam Drop Hammer.
30" throat Queen City 1" thru 4" Punch.
Pels Steel Plate Shear for 15" I-Beams.
800 lb. Erie Single Frame Steam Hammer.
1500 lb. Sgl. Frame Steam Hammer.
Plate Bending Rolls, 6' Doty, capacity 1" plate.
Baker Bros., 25" sw., Heavy Duty, high speed, single pulley drive.
No. 310 Drill Presses (3).

Morton, 18" str., 2 $\frac{1}{2}$ " wide Keyscater.
8" spindle Baush Multiple Drill, 20" dia, circular head, universally adjustable, 1" capacity.
2 spindle Foote-Burt Vertical Spdl., adjustable Cylinder Borer.
72" Colburn Vertical Boring Mill, 2 swivel heads.
Acme 4 spindle Nut Tapper, 1 $\frac{1}{2}$ ".
Colburn 25" sw. Heavy Duty Drill, compound table.
2 Himhoff 6" Auto. Gear Hobbers.
4' Buckford Radial Drill, Plain.
5' Pond Radial Drill, Plain, (2).

WRITE FOR INDUSTRIAL BULLETIN No. 204

New Machinery For Sale

In Stock at Chicago and New York

Lathes

24"x13' Chald, q. c. g., d. b. g.
20"x11' Chard, q. c. g., d. b. g., (2).
20"x10' Wickes, q. c. g., d. b. g.
16"x6' Whitcomb-Blaisdell.
14"x 8' Cisco, q. c. g., d. b. g.

12"x 5' 6" Davis tool room,
6"x30" and 6"x36" Dalton bench.
Full line, Rivett precision bench
Full line Stark precision bench.

Drilling Machines

3' Wisconsin sensitive radial.
32" Cleveland sliding head.
28" Cleveland sliding head.
25" Cleveland upright.
23" Cleveland, upright.
23" Snyder upright.
22" Cleveland upright.

21" Cleveland upright, (5).
20" Wisconsin, all-g geared, (2).
20" Canedy-Otto, upright, (4).
14" U. S.
Belt and motor driven bench.
Van Dorn portable electric.

Boring and Drilling Machines

No. 9 Pawling & Harnischfeger, (2). | No. 12 Pawling & Harnischfeger.

Milling Machines

No. 2-B Fox plain.
Nos. 1-A, 1-B and 0-B Fox plain.

Burke bench.
U. S. No. 1, hand.

Grinders

No. 3 Modern universal.
No. 1 Wilmarth & Morman univ.
Lafayette universal.
10"x32" Ott universal.
No. 103 Rivett internal.
No. 2 Reid surface.
6"x6" Ott internal.

Webster & Perks, No. 2 universal.
No. 1 Norton cutter and tool.
Grand Rapids drill—various sizes.
Partridge floor stands, (all sizes).
Strand electric, flexible shaft.
Dumore, (all sizes).

Shapers

34" Milwaukee.
30" Milwaukee heavy duty.

16" Milwaukee.
7" Rhodes horizontal.

Hack Saws

Peerless, (all sizes).
No. 1 Racine.

6"x6" Starrett.
6"x6" Economy.

Miscellaneous

Arbor presses, Atlas, all sizes.
Buffing machine, No. 2 Blount.
Filing machines, Nos. 2 & 3 Barry.

Press, Lebanon, foot.
Shear, 18-H Lenox, throatless.
Tinnors' rolls, Pexto.

USED MISCELLANEOUS

Cold Saw, No. 15 Lea Simplex.
Lathe, 14"x5' Dreses Monitor. (2).

Lathe, 24" Steidle turret.

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No. 9 Giddings & Lewis horizontal.
60" Bullard, 2 plain heads.

DRILLING MACHINES

16" Cleveland, h. s., b. b. Drill.
6' Gang Radial Drill.
6' Prentice Radial Drill.

GEAR CUTTERS

No. 3 Farwell Gear Hobber. | 8" Hercules.

GRINDERS

No. 12 Brown & Sharpe universal.	No. 8 Besly Disc Grinder.
8"x40" Morse Grinder.	Wisconsin Tool and Cutter.
14"x50" Norton Grinder.	Gisholt Tool Grinder.
No. 12 Modern Grinder.	

LATHES

12"x 5' Blount Speed Lathe.
16"x 8' Hamilton style "A", taper and relieving attachment.
18"x10' Bradford, compound rest, double back gear.
32"x18' Bradford, compound rest.
Porter-Cable Mfg. Lathe.

MILLING MACHINES

No. 5 Hende, Lincoln type.	No. 3 Becker vertical.
Taylor & Fenn vertical.	No. 13 Brown & Sharpe.
No. 18 Cincinnati plain.	12" P. & W. automatic.
No. 14 Rockford plain.	Type "A" Briggs.
No. 3-B Milwaukee plain.	No. 32 Kempsmith.

SCREW MACHINES

No. 0 Foster, plain head, automatic chuck and wire feed.
No. 2 Foster, plain head, automatic chuck and wire feed.
No. 1 Pratt & Whitney, automatic chuck and wire feed.

TURRET LATHES

21" Gisholt.
24" Gisholt.
2"x24" Jones & Lamson.
Potter & Johnston.
14" Warner & Swasey.

PRESSES

No. 6 Fames Arbor Press.
No. 2-A Bliss Double Crank Geared Press.
No. 3 Walsh, o. b. i.
No. 19 Walsh, o. b. i.

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117-121 N. Jefferson Street

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Back to Lower Prices

In keeping with the spirit of the times and in an endeavor to get back to normal quickly, we are offering our entire stock of used machines and many new tools at sacrifice prices. Do not ask us for a list but specify exactly what you want and we will quote you by return mail or wire, if necessary. The following are a few Machines picked at random from our stock:

LATHES

- | | |
|---|-------------------------------------|
| 9" to 13" Barnes, h. s., cp. r., new. | 20"x10' Hamilton, double back gear. |
| 10"x5' Summit, nearly new, (5). | 24"x12' Fay & Scott. |
| 13-15-16 and 18 O. & S., h.s., c.r., new. | 25"x14' Schumacher & Boye. |
| 16"x8' Columbus, new. | 8"x60" Fitchburg Lo-Swing. |
| 18"x8' Fitchburg, hol. spdl., cp. r. | 21" and 24" Gisholt, turret. |

TURRET LATHES and SCREW MACHINES

- | | |
|--|---------------------------------|
| 24" Steinle, 6 1/2" hol. spdl., grd. hd. | No. 2 Warner & Swasey hol. hex. |
| 1 1/2" Tilted turret hand screw mche. | Nos. 52, 53 & 56 National Acme. |
| 2x24 & 3x36 J. & L., dbl. equipment. | 14" Reed heavy duty. |

SHAPERS

- | | |
|--------------------------------|-----------------------------------|
| 14" Niles, traveling head. | 24" Walcott, geared. |
| 14" Smith & Mills, crank. | 20" Smith & Mills, geared. |
| 16" Barker, back geared crank. | 16" Springfield, crank, back grd. |

PLANERS

- | | |
|----------------------------------|-------------------------------|
| 24x24x6' Hendey. | 54x54x16' Sellers, 4 heads. |
| 24x24x6' Pease. | 60x60x17' Betts, 2 heads. |
| 36"x36"x12' Niles. | 60x60x20' Sellers, 4 heads. |
| 44x44x12' Pond, 4 heads. | 66x66x20' New Haven, 2 heads. |
| 48x48x16' Bement-Miles, 2 heads. | 84x84x32' Putnam, 4 heads. |

PRESSES

- | | |
|---|---|
| No. 858 Toledo, 36" stroke, 15,000 lbs. | No. 3 Robinson, 4300 lbs., o. b. i. |
| Perkins, dbl. crank, 16x24 bolster. | No. 6-A Willard 3400 lbs. inclinable |
| No. 35 Niagara, Stiles type, (2). | No. 1 1/2 Robinson 1500 lbs. inc., (3). |

DRILLS and RADIALS

- | | |
|--------------------------------------|--------------------------------------|
| Henry & Wright sgl. spdl., high spd. | 24", 36", 28" and 32", sliding head. |
| 2 1/2" Canedy-Otto plain, new. | 3' Morris plain, gear box drive. |
| Sensitive 1, 2, 3, 4 and 6 spindle. | 4 1/2' Prentice, gear box drive. |

Six new standard makes 20" Drills, each \$123.50

MILLING MACHINES

- | | |
|------------------------------------|--|
| No. 35 Becker plain, (3). | No. 1 1/2 B. & S. plain. |
| Ames, Lincoln type, 16"x40" table. | No. 2 H Brown & Sharpe plain. |
| No. 2 Kempsmith universal. | Briggs type "A" high duty, 24x8 table. |
| No. 3 Brainard, 30x7 table. | No. 32 Kempsmith Lincoln type, (3). |

GRINDERS

- | | |
|-------------------------------------|--------------------------|
| Nos. 1 & 78 W. & M. surface. | Landis 10x24 universal. |
| 10x24 Norton plain. | Litter 10x20 universal. |
| Capital, internal, practically new. | 36" and 66" Yates plate. |

MISCELLANEOUS

- | | |
|---|---|
| Aircompressors, 12x10 and 9x8 Franklin, 9x8 Nagle Corliss engine. | Hammer, Canton 6,000 lb. b.g. drop. |
| Band saws, metal, Klemm, (2). | Motors, 1 to 50 h.p., 3 ph., 220 v., G.E. |
| Boring mill, 12", 2 swivel heads. | Oil groover, Garvin, nearly new. |
| Brake, 8' Keene, for 16 gauge. | Oil separator, Springfield. |
| Compressors, 9x8 and 12x10, new. | Pipe machines, 2", 4", 6" & 12". |
| Gear cutter, G. & E. 36". | Pumps, Gould triplex, 6"x8" & 7"x8". |
| Gear cutter, Whiton 36"x9 1/2" face. | Punch & shears, 1 thru 1 1/2" throat. |
| Hammers, 40 lb. Bradley, helve, (2). | Riveter, high speed, 3" capacity. |
| Hammer, Toledo, 5,000 lb. fric. brd. | Shear, 5' Robinson, for 10 gauge. |
| | Shear, 8' Robinson, for 16 gauge. |

Osborne & Sexton Machinery Co.

Columbus, Ohio

Dayton Office: 1118 Lindsey Building, Phone Main 1524

SIMMONS

BORING MILLS

- 10' Betts Vertical Mill, 15 h. p., var. speed motor.
- 12' Bement Extra Heavy Boring and Turning Mill, 2 swivel heads.
- 34" Bertram Vertical Turret Head Boring Mill.
- 36" Bullard New Era Type Vertical, Cutting Lub. System.
- 37" Bullard Boring and Turning Mill.
- 24" Bullard New Era Type Vertical Turret Lathe.

PLANERS

- 24"x24"x 8' Cincinnati, 1 hd. on rail.
- 30"x30"x18' Cincinnati, two heads.
- 42" Newton Rotary, belt or motor dr.
- 36"x36"x20' Woodward-Powell four heads.
- 45"x45"x28' Cincinnati, 2 hds, NEW.
- 42"x42"x12' Simmons openside, two heads, NEW.
- 48"x48"x20' Ridgeway h.-duty, 4 hds.
- 50" Sellers Rotary, 24' travel.
- 60"x60"x20' Woodward-Powell, four heads, 35 h. p. motor rev.

RADIAL DRILLS

- 6' Pond plain radial.
- 6' Reed Prentice plain.
- 5' Niles-B-P, semi-universal.
- 4' Dreses plain, tapping attachment.
- 4' Hammond high speed.
- 5' Fosdick full universal.
- 4-Spindle Harrington, ad. head.
- No. 310 Baker heavy duty drills, 24" capacity in steel, (3).
- 26" Sibley, sliding head, back geared.

LATHES

- No. 326 Toledo Spinning Lathes, (2).
- 18"x12' Prentice Engine Lathe.
- 24"x10' American high duty, geared head, (7).
- 24"x18' LeBlond heavy duty Engine Lathe.
- 27"x18' LeBlond Heavy Duty, q. c. g., with motor, (8).
- 27"x24' LeBlond heavy duty, d. b. g., q. c. g., NEW, (6).
- 30"x12' High Duty American, geared head, motor drive, with motor, (4).
- 26"x14' Putnam All Geared Head Lathe.
- 36"x18' Putnam Heavy Duty, Triple Geared Lathe.
- 36"x34' Bridgeford geared head, q. c. g., NEW, (6).
- 42"x20' Niles-Bement-Pond, heavy duty triple geared.
- 48"x29'-56" Niles-Bement-Pond, motor drive, NEW, (8).
- 60"x29'-56" Niles-Bement-Pond, motor drive, NEW, (4).

MILLERS

- No. 2 Cincinnati, geared head, high power universal, (4).
- No. 3 Cincinnati high power plain.
- No. 3-S Cincinnati geared head universal, (8).
- No. 3 Cincinnati heavy duty geared head vertical, (5).
- No. 4 Cincinnati high duty vertical.
- Pratt-Whitney heavy duty Slab Miller.
- Type-B Gooley-Edlund high duty "Briggs Type".

MISCELLANEOUS

- New 10-ton 48' span Niles Crane, 230 volt, d. c. equipment.
- New 5-ton Milwaukee Cranes, 38' span, d. c. motor equipment, (4).
- Double End Punching and Shearing Machine, Niles-Bement-Pond, 14" cap.
- 14"x96" Norton Plain Grinder, NEW.
- 32" Cincinnati High Duty Shapers, NEW, (8).
- No. 97 Bliss Straight Side Double Crank Geared Presses, (2).
- No. 30 Bliss Power Presses, (8).

Simmons Machine Co., Inc.

Albany, N. Y.

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High-grade Modern style Tools at very LOW prices

HORIZ. BORING MACHINES

"KNEE TYPE"

- 41" bar, Niles, 64" sw., power raise.
- 41" bar, Bement-M., 62" sw., pwr. raise.
- 41" bar, Bement-M., 62" sw., pwr. raise.
- 3" bar, Bement, power raise.

RADIAL DRILLS

- 5' arm, Dresses, cone drive.
- 4' arm, Dresses, cone drive.
- 4' arm, Cincinnati-B., spd.-box dr.

SLOTTERS

- 24" stroke, Niles-B.-P. (like new), motor drive, complete with motor.
- 10" stroke, Betts cone drive.

PLANERS

- 48"x48"x15" Pond M. T. Co., 2 hds.
- 48"x48"x14" Sellers, 3 heads.
- 30"x30"x 6" Cincinnati.

MILLING MACHINES

- Vertical Brown & S. No. 5, table fd.
- 52", circular milling att.
- Vertical, Cincinnati No. 2.
- Mfrs. style, Hendey No. 5, qk. ch.
- Mfrs. style, Becker-Brainard No. 7.
- Plain, No. 3 Cincinnati, working surface table 45"x12".
- Plain, No. 22 Brainard, working surface table 48"x14".
- Plain keyseat miller, horiz. and vert. spindles, table 60"x12", Newton.

LATHES (Used)

- Two Heavy Tri. Grd. Long Beds—
- 1—56"x60", 50" bet. centers; tri. grd. face plate 48" diameter, 3/4" face, built by Israel Johnson, Jr., & Co.
- 1—50"x30", 20" bet. centers, Johnson.

OTHERS LATHES

- 50"x20" Pond, triple geared.
- 50"x13 1/2" American, qk. ch., tri. grd.
- 36"x20" Putnam.
- 36"x14" Bridgeford, geared head, quick change, motor drive.
- 30"x32" Putnam, grd. hd., motor dr.
- 28"x18" Johnson, qk. ch., taper att.
- 24"x12" Putnam, qk. ch., taper att.
- 20"x10" American, qk. ch., grd. hd.
- 18"x10" Schumacher & B., taper att.
- 18"x8" American, qk. ch., taper att.

DRIVING-WHEEL LATHE

- 80" sw., with quartering att., Bement, double-head, turns both wheels same time.

DOUBLE SPINDLE LATHES

- 26/48" sw., 18' bed, 12' centers, McCabe, with geared face-plate, ck.-jaws, etc., like new.
- 26/48" sw., 14' bed, 8' centers, McCabe, with geared face-plate.
- 26/48" sw., 12' bed, 6' centers, McCabe, with plain face-plate.

LO-SWING LATHE

- 3 1/2"x60" Fitchburg, complete equip.

TURRET LATHES

- 28" Pond, rigid type, 4 1/2" hole, rapid traverse to turret.
- 21" Gisholt, like new, 32" gap.
- 20" P. & J., 2" hole, geared head.
- 3x36" J. & L., flat turret, bar equip.
- 2x24" Jones & Lamson, flat turret, bar and chucking equip.
- 1 1/2" Auto. Screw Mch., Hartford.

GEAR CUTTERS

- 22" Bevel Gear Planer, Gleason.
- 30" Gould & E., spur and bevel.
- 36" Fellows Gear Shaper.
- 56" Eberhardt Bros. for spur.

PUNCHES AND SHEARS

- Horizontal Punch, 60" gap, H. & J., wt. 68,000 lb., arr. for mtr., no mtr.
- Punch and Shear, single-end, 50" gap, weight 33,000 lbs.
- Punch and Shear, single-end, 42" gap, with motor, Hiles & Jones.
- Punch and Shear, double-end, 36" gap, belt-dr., Long & Allstatter.
- Portable Punch, Pels.

AIR RIVETER

- 19" gap, Albree, cap. 1 1/2" rivets.

GRINDERS

- Plain Roll Grinder, table 66"x12", takes 36" centers. Bridgeport, like new.
- Universal, Landis, 16" sw., 60" cent'rs.
- Universal, Landis, 10" sw., 30" cent'rs.
- Universal, Iroquois, 12" sw., 36" cent'rs.

BENDING ROLLS

- 14' 2" bet. housings, drop-end, H. & J., top roll 11" diam., two lower rolls 8" diam. (one grooved), center support for lower rolls, friction clutch pulley drive.
- 10' 2" bet. housings, drop-end, top roll 10 1/2" diam., two lower rolls 8", wt. 20,000 lb. Motor or belt drive.

BIG BORING MILL

- 10—16' Extension Style Upright Boring and Turning Mill, built by Betts Machine Company, adjustable from 10 to 16' swing, as desired. Has 2 heads on crossrail, having all the automatic feeds for boring, turning and facing. Housings, double-web, box form. Table 10' in depth. Belt driven, with geared feeds. In thoroughly good condition. Especially adapted for shops doing a variety of work, as it covers such a wide range. If prompt action is taken, this mill can be seen in operation near Pittsburgh—and before taking down, as orders have been issued to prepare for shipment.

Price will be made attractive, to avoid expense of shipping to our warehouse.

J. J. McCabe Lathe & Machinery Corp., 149 Broadway, New York

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EVERY Re-MANUFACTURED MACHINE TOOL in our place represents an unusual BARGAIN. A card will bring our latest GREEN LIST containing 2000 machine tools. We welcome inspection of our plant and our process.

LATHES.

- 30-14"x 6' Reed extra heavy plain.
- 1-ca. 14" & 16"x6' Flather, q. c. g.
- 6-16"x 6' Reed.
- 8-17"x 6' LeBlond mfg. auto.
- 22-18"x 8' Boye & Emmes, q. c. g.
- 20-19"x 8' LeBlond heavy, q. c. g.
- 13-20"x 8' LeBlond, q. c. g.
- 69-20"x 8' American, q. c. g.
- 3-20"x10' Lodge & Shipley, q. c. g.
- 26-21"x10' LeBlond heavy, q. c. g.
- 19-22"x 8' Davenport.
- 8-25"x10' LeBlond heavy, q. c. g.
- 28-26"x10' Niles-Bement-Pond.
- 13-26"x 9' Bridgeford, q. c. g.
- 70-26"x10' Bridgeford, q. c. g.
- 22-26"x12' Bridgeford, q. c. g.
- 1-28"x20' Bridgeford, q. c. g.
- 6-30"x11' American, geared head.
- 1-30"x20' American, geared head.
- 19-32"x12' Pittsburgh, q. c. g.
- 2-36"x14' Johnson, triple geared.
- 1-36"x19' Johnson, triple geared.
- 15-36"x30' Pittsburgh, geared head.
- 4-36"x37' Niles-B.-Pond, trip. grd.
- 4-40"x12' Fifeild, triple geared.
- 1-40"x18' Fifeild, triple geared.
- 2-45"x24' Pond, triple geared.

UPRIGHT DRILLS & RADIALS

- 1-2-spindle Henry & Wright.
- 15-6-spindle Allen.
- 3-No. 6-B Henry & Wright sens.
- 1-20" Silver.
- 1-25" Silver, sliding head.
- 3-3" American sensitive radials.
- 1-6-spindle Barnes gang.

BORING MILLS.

- 1-30" Gisholt.
- 1-10" Niles vertical.
- 1-4" bar Niles horizontal.
- 1-Beaman & Smith horiz., 2 heads.
- 1-2-spindle Espen-Lucas, 2 heads.

GRINDERS.

- 12-American drill.
- 1-No. 2 Garvin hole.
- 2-No. 70 Heald internal.
- 1-12"x36" Landis plain.

- 1-No. 2 Bath surface.
- 1-8"x48" Thompson surface.
- 2-12"x36" Landis plain.
- 2-12"x36" Modern plain.
- 1-20"x144 Landis plain.

MILLERS.

- 49-No. 6 Whitney hand.
- 60-Garrigus hand.
- 23-Van Norman hand.
- 60-No. 34 Fox, p. f.
- 1-No. 0 Brown & Sharpe.
- 32-12" Cincinnati mfg.
- 2-No. 4 Cincinnati plain, s. p. d.
- 2-No. 4 Becker vertical.
- 105-No. 4 Hendey Lincoln.
- 25-No. 4 Loew-Victor Lincoln.
- 11-No. 12 Pratt & Whitney Lincoln.
- 50-No. 7-H Becker Lincoln.
- 1-Type B-34" Briggs.
- 2-18" Cincinnati automatic.
- 7-Putnam semi-automatic.
- 1-17"x10' Newton, 3 heads.
- 1-No. 14 Newton duplex.
- 1-24"x 6' Ingersoll, 3 heads.
- 1-48"x10' Newton slab.

SHAPERS AND PLANERS.

- 6-26" Niles-Bement-Pond.
- 1-34"x26"x 8' American planer.
- 2-36"x13"x14' N.-B.-P., frog & sw.
- 1-56"x56"x10' Gray, 2 heads.
- 1-72"x72"x14' Niles, 4 heads.
- 1-96"x72"x20' Bement-Miles, 4 hds.

TURRET AND SCREW MCHS.

- 8-8" Pratt & Whitney screw.
- 1-1" Pratt & Whitney screw.
- 8-1" Warner & Swasey No. 2.
- 5-1" Foster No. 2.
- 5-14" Foster No. 3.
- 3-12" Warner & Swasey No. 4.
- 4-No. 4 Warner & Swasey univ.
- 15-14" Wood No. 4.
- 1-14" Southworth No. 4.
- 1-2" B. & S. No. 6, wire feed.
- 2-2" Pratt & Whitney screw.
- 1-2" Wood No. 6.
- 2-3x36 Jones & Lamson.
- 1-3x36 Acme.

Write for our Green List describing these and many others

HILL, CLARKE & CO. OF CHICAGO

649 W. WASHINGTON BLVD., CHICAGO, ILL.

Classified Finding Index

- Air Guns**
Powell Co., Wm., Cincinnati
- Angle Plates**
Germanow-Simon Mch. Wks., Rochester, N.Y.
- Arbors, Solid**
Nicholson & Co., W. H., Wilkes-Barre, Pa.
- Automatics**
National Acme Company, Cleveland
New Britain Machine Co., New Britain, Conn.
- Balancing Ways**
Anderson Bros. Mfg. Co., Rockford, Ill.
- Ball Bearings**
Abbott Ball Co., Hartford, Conn.
- Balls, Brass, Bronze and Steel**
Abbott Ball Co., Hartford, Conn.
- Band Saw Machines, for Metal**
Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago
- Barrels, Tumbling**
Abbott Ball Co., Hartford, Conn.
Scully-Jones & Co., Ry. Exch. Bldg., Chicago
- Belt Shifter**
Kremer-Cummins Machine Co., Cleveland
- Bench Legs, Steel**
New Britain Mch. Co., New Britain, Conn.
- Bending Machines, Hand and Power**
Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
Lewthwaite Mch. Co., P. H. 4175, 31st., N. Y.
Lourie Mfg. Co., Springfield, Ill.
Pedrick Tool & Machine Co., Philadelphia
Ryerson & Son, Joseph T., Chicago
Underwood Corp., H. B., Philadelphia
- Boring Bars**
Madison Mfg. Co., Muskegon, Mich.
Pedrick Tool & Machine Co., Philadelphia
Ready Tool Co., Bridgeport, Conn.
Underwood Corp., H. B., Philadelphia
- Boring Bars, Cylinder**
Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia
- Boring, Drilling and Milling Machines, Horizontal**
Barnes Co., W. F. & John, Rockford, Ill.
Beaman & Smith Co., Providence, R. I.
Carroll Fdry. & Mch. Tool Co., Bucyrus, Ohio
Pawling & Harnischfeger Co., Milwaukee
Simmons Machine Co., Albany, N. Y.
- Boring Machines, Horizontal**
Avey Drilling Machine Co., Cincinnati
Pedrick Tool & Machine Co., Philadelphia
- Boring and Turning Machines, Vertical**
Simmons Machine Co., Albany, N. Y.
Turner Machine Co., Danbury, Conn.
- Broaches**
Velco Mfg. Co., Inc., Greenfield, Mass.
- Broaching Machines**
Simmons Machine Co., Albany, N. Y.
- Case Hardening Compound**
Hochman Chemical Co., C. G., Cincinnati
- Casters for Trucks**
Hamilton Caster & Mfg. Co., Hamilton, Ohio
- Centers, Index**
Brown & Sharpe Mfg. Co., Providence, R. I.
Carter & Hakes Mch. Co., W. Winsted, Conn.
- Chains, Power Transmission**
Culman Wheel Co., 1344 Altgeld St., Chicago
Whitney Mfg. Co., Hartford, Conn.
- Chasers**
Modern Tool Co., Erie, Pa.
National Acme Co., Cleveland
- Chucking Machines**
New Britain Mch. Co., New Britain, Conn.
- Chucks, Air**
Frontier Chuck & Tool Co., Buffalo, N. Y.
- Chucks, Centering**
McCroskey Tool Corporation, Meadville, Pa.
Thomas Elevator Co., 31 S. Hoyne Ave., Chicago
- Chucks, Drill**
Collis Company, The, Clinton, Iowa
Hartford Special Mch. Co., Hartford, Conn.
Jacobs Mfg. Co., Hartford, Conn.
McCroskey Tool Corporation, Meadville, Pa.
Modern Tool Co., Erie, Pa.
Scully-Jones & Co., Ry. Exch. Bldg., Chicago
Thomas Elevator Co., 31 S. Hoyne Ave., Chicago
Weaver Mfg. Co., Springfield, Ill.
- Chucks, Drill and Tap**
Collis Company, The, Clinton, Iowa
McCroskey Tool Corporation, Meadville, Pa.
Modern Tool Co., Erie, Pa.
Peter Bros. Mfg. Co., Algonquin, Ill.
Scully-Jones & Co., Ry. Exch. Bldg., Chicago
- Chucks, Keyway Cutting**
Scully-Jones & Co., Ry. Exch. Bldg., Chicago
- Chucks, Lathes**
Thomas Elevator Co., 31 S. Hoyne Ave., Chicago
- Chucks, Magnetic**
Heald Machine Co., Worcester, Mass.
- Chucks, Wrenchless**
Thomas Elevator Co., 31 S. Hoyne Ave., Chicago
- Clutches, Friction**
Edgemont Machine Co., Dayton, Ohio
Milwaukee Shaper Co., Milwaukee, Wis.
- Cold Saws**
Burke Machine Tool Co., Conneaut, Ohio
Cochrane-Bly Co., Rochester, N. Y.
Knowlton Machine Co., Westbrook, Me.
Peter Bros. Mfg. Co., Algonquin, Ill.
- Collets, Lathes and Screw Machine**
Morrison Machine Products, Inc., Rochester, N. Y.
- Couplings, Flexible**
Cooper Flexible Transmission Co., Inc., Brooklyn
- Cranes, Hand Power**
Euclid Crane & Hoist Co., Euclid, Ohio
Pawling & Harnischfeger Co., Milwaukee, Wis.
Weaver Mfg. Co., Springfield, Ill.
- Cranes, Portable**
Caneby-Otto Mfg. Co., Chicago Heights, Ill.
Canton Foundry & Mch. Co., Canton, Ohio
Weaver Mfg. Co., Springfield, Ill.
- Cranes, Traveling**
Euclid Crane & Hoist Co., Euclid, Ohio
Pawling & Harnischfeger Co., Milwaukee, Wis.
- Crank Pin Turning Machine**
Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Classified Finding Index

Cutters, Adjustable

McCroskey Tool Corporation, Meadville, Pa.
Madison Mfg. Co., Muskegon, Mich.

Cutters, Bolt

Lewthwaite Co., Geo. A., 116 Walker St., N. Y.

Cutters, Keyseating

Elco Tool Corporation, Rockford, Ill.
Scully Jones & Co., Ry. Exch. Bldg., Chicago
Whitney Mfg. Co., Hartford, Conn.

Cutters, Milling

Brown & Sharpe Mfg. Co., Providence, R. I.
Elco Tool Corporation, Rockford, Ill.
Mebach Tool & Machine Co., Boston
Whitney Mfg. Co., Hartford, Conn.

Cutting-Off Machines

Davis Machine Tool Co., Rochester, N. Y.
Etna Mfg. Co., Toledo, Ohio
Peter Bros. Mfg. Co., Algonquin, Ill.

Cylinder Boring Machines, Portable

Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Cylinder Grinders

B. L. Schmidt Co., Davenport, Iowa

Cylinder or Dome Facing Machines

Underwood Corp., H. B., Philadelphia

Dies, Self-Opening

Modern Tool Co., Erie, Pa.
Murchey Machine & Tool Co., Detroit, Mich.
National Acme Company, Cleveland

Dies, Pipe Threading

Signal & Keeler Mch. Wks., Edwardsville, Ill.

Dies, Screw and Thread Cutting

National Acme Company, Cleveland

Dies, Self-Opening Adjustable

Modern Tool Co., Erie, Pa.
Murchey Mch. & Tool Co., Detroit, Mich.
Rickert-Shafer Co., Erie, Pa.
Victor Tool Co., Inc., Waynesboro, Pa.

Dogs, Machine

Ready Tool Co., Bridgeport, Conn.

Drilling Machine Heads

Nelson-Blanch Mfg. Co., Detroit, Mich.
United States Drill Head Co., Cincinnati
United States Machine Tool Co., Cincinnati

Drilling Machines, Bench

Avey Drilling Machine Co., Cincinnati
Barnes Co., W. F. & John, Rockford, Ill.
Burke Machine Tool Co., Conneaut, Ohio
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
High Speed Hammer Co., Rochester, N. Y.
Reed Co., Francis, Worcester, Mass.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Horizontal

Fawling & Harnischfeger Co., Milwaukee, Wis.

Drilling Machines, Multiple Spindle

Avey Drilling Machine Co., Cincinnati
National Acme Company, Cleveland
Reed Co., Francis, Worcester, Mass.
Sipp Machine Co., Paterson, N. J.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Post

Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Mueller Machine Tool Co., Cincinnati

Drilling Machines, Radial

Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Mueller Machine Tool Co., Cincinnati
Fawling & Harnischfeger Co., Milwaukee, Wis.
Ererson & Son, Joseph T., Chicago
Taylor & Fenn Co., Hartford, Conn.
Sipp Machine Co., Paterson, N. J.

Drilling Machines, Sensitive

Avey Drilling Machine Co., Cincinnati
Burke Machine Tool Co., Conneaut, Ohio
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Reed Co., Francis, Worcester, Mass.
Sipp Machine Co., Paterson, N. J.
Taylor & Fenn Co., Hartford, Conn.
United States Machine Tool Co., Cincinnati
Wisconsin Electric Co., Racine, Wis.

Drilling, Milling and Boring Machines, Vertical

Aurora Tool Works, Aurora, Ind.

Drilling Machines, Vertical

Aurora Tool Works, Aurora, Ind.
Avey Drilling Machine Co., Cincinnati
Barnes Co., W. F. & John, Rockford, Ill.
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Davis Machine Tool Co., Rochester, N. Y.
Frontier Mch. Tool Co., Inc., Buffalo, N. Y.
Hinckley Machine Works, Hinckley, Ill.
Minster Machine Co., Minster, Ohio
Richards Machine Co., Milwaukee, Wis.
Ryerson & Son, Joseph T., Chicago
Sipp Machine Co., Paterson, N. J.
Taylor & Fenn Co., Hartford, Conn.

Drilling and Tapping Attachments

Aurora Tool Works, Aurora, Ind.
McCroskey Tool Corporation, Meadville, Pa.
Modern Tool Co., Erie, Pa.
Reed Co., Francis, Worcester, Mass.
Sipp Machine Co., Paterson, N. J.
Turner Machine Co., Danbury, Conn.

Drills, Portable Electric

Wisconsin Electric Co., Racine, Wis.
Wodack Electric Tool Corporation, 25 S. Jefferson St., Chicago

Dust Handling Equipment

Knickerbocker Co., Jackson, Mich.

Emery Stands

Blount Co., J. G., Everett, Mass.
Marachke Mfg. Co., Inc., Indianapolis, Ind.

Emery Wheel Dressers and Cutters

Taylor & Fenn Co., Hartford, Conn.

Facing Heads, Automatic

Mummert-Dixon Co., Hanover, Pa.

Feeders, Oil and Soda Water

New Britain Machine Co., New Britain, Conn.

Filing Machines

Johnson & Biddle Tool Co., Elkhart, Ind.

Filing and Sawing Machines

Johnson & Biddle Tool Co., Elkhart, Ind.

Flexible Shafts

Strand & Co., N. A., 549 Washington Blvd., Chicago

Forges

Canedy-Otto Mfg. Co., Chicago Heights, Ill.

Forgings, Hollow Bored

American Hollow Boring Co., Erie, Pa.

Furnaces

Bennett Co., W. B., Elmwood, Conn.

Furniture, Machine Shop

New Britain Machine Co., New Britain, Conn.

Gauges, Taper

Hartford Special Mch. Co., Hartford, Conn.
Way Co., A. F., Hartford, Conn.

Gear Cutting Machines

Brown & Sharpe Mfg. Co., Providence, R. I.

Grinding Machines, Bench

Blount Co., J. G., Everett, Mass.

Classified Finding Index

Grinding Machines, Cutter, Reamer and Tool

Barnes Co., W. F. & John, Rockford, Ill.
 Blount Co., J. G., Everett, Mass.
 Brown & Sharpe Mfg. Co., Boston
 Manhattan Machine & Tool Works, Grand Rapids, Mich.
 Marschke Mfg. Co., Inc., Indianapolis, Ind.
 Modern Tool Co., Erie, Pa.
 Mummert-Dixon Co., Hanover, Pa.
 National Acme Co., Cleveland
 Ryerson & Son, Joseph T., Chicago
 Simmons Machine Co., Albany, N. Y.
 Thompson Grinder Co., Springfield, Ohio
 Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Cylinder

Heald Machine Co., Worcester, Mass.
 Schmidt Co., B. L., Davenport, Iowa
 Whitney & Son, Baxter D., Winchendon, Mass.

Grinding Machines, Cylindrical

Brown & Sharpe Mfg. Co., Providence, R. I.
 Manhattan Machine & Tool Works, Grand Rapids, Mich.
 Modern Tool Co., Erie, Pa.
 Ott Grinder Co., Indianapolis, Ind.
 Schmidt Co., B. L., Davenport, Iowa
 Simmons Machine Co., Albany, N. Y.
 Thompson Grinder Co., Springfield, Ohio

Grinding Machines, Die

Manhattan Machine & Tool Works, Grand Rapids, Mich.
 Modern Tool Co., Erie, Pa.
 Thompson Grinder Co., Springfield, Ohio
 Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Drill

Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Face

Marschke Mfg. Co., Inc., Indianapolis, Ind.
 Taylor & Fenn Co., Hartford, Conn.
 Thompson Grinder Co., Springfield, Ohio

Grinding Machines, Internal

Heald Machine Co., Worcester, Mass.
 Modern Tool Co., Erie, Pa.
 Ott Grinder Co., Indianapolis, Ind.
 Schmidt Co., B. L., Davenport, Iowa
 Taylor & Fenn Co., Hartford, Conn.
 Thompson Grinder Co., Springfield, Ohio
 Whitney & Son, Baxter D., Winchendon, Mass.
 Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Oilstone

Mummert-Dixon Co., Hanover, Pa.

Grinding Machines, Portable

Marschke Mfg. Co., Inc., Indianapolis, Ind.
 Mummert-Dixon Co., Hanover, Pa.
 Strand & Co., N. A., 649 Washington Blvd., Chicago
 Wisconsin Electric Co., Racine, Wis.
 Wodack Electric Tool Corporation, 25 S. Jefferson St., Chicago

Grinding Machines, Snagging

Manhattan Machine & Tool Works, Grand Rapids, Mich.
 Marschke Mfg. Co., Inc., Indianapolis, Ind.

Grinding Machines, Surface

Heald Machine Co., Worcester, Mass.
 Thompson Grinder Co., Springfield, Ohio
 Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Universal

Brown & Sharpe Mfg. Co., Providence, R. I.
 Modern Tool Co., Erie, Pa.
 Ott Grinder Co., Indianapolis, Ind.
 Simmons Machine Co., Albany, N. Y.
 Thompson Grinder Co., Springfield, Ohio
 Wilmarth & Morman Co., Grand Rapids, Mich.

Hack Saw Machines

Armstrong-Blum Mfg. Co., 341 N. Francisco Av., Chicago
 Peerless Machine Co., Racine, Wis.
 Ryerson & Son, Joseph T., Chicago

Hammers, Air

Nazel Engineering & Mch. Wks., Philadelphia

Hammers, Belt & Motor Driven

Beaudry & Co., Boston
 Nazel Engineering & Mch. Wks., Philadelphia
 United Hammer Co., Boston

Hammers, Electric

Wodack Electric Tool Corporation, 25 S. Jefferson St., Chicago

Hammers, Power

Beaudry & Co., Boston
 Nazel Engineering & Mch. Wks., Philadelphia
 United Hammer Co., Boston

Hammers, Riveting

High Speed Hammer Co., Rochester, N. Y.
 Quickwork Co., St. Marys, Ohio

Heads, Dividing

Simmons Machine Co., Albany, N. Y.
 Willard-Middletown Machine Co., Cincinnati

Hoists, Electric

Euclid Crane & Hoist Co., Euclid, Ohio
 Thomas Elevator Co., 31 S. Hoyne Ave., Chicago
 Weaver Mfg. Co., Springfield, Ill.

Hoists, Electric Traveling

Euclid Crane & Hoist Co., Euclid, Ohio
 Pawling & Harnischfeger Co., Milwaukee, Wis.

Hoists, Portable

Canton Foundry & Machine Co., Canton, Ohio

Jigs, Fixtures, Tools, Etc.

Hartford Special Mch. Co., Hartford, Conn.
 Hinchley Machine Works, Hinchley, Ill.
 Way Co., A. F., Hartford, Conn.

Joints, Universal

Borgeson Manufacturing Co., Inc., Torrington, Conn.
 Cooper Flexible Transmission Co., Inc., Brooklyn

Keyseating Machines

Rucher-Smith Co., East Liverpool, Ohio
 Chattanooga Mch. Co., Chattanooga, Tenn.
 Davis Machine Tool Co., Rochester, N. Y.
 National Machine Tool Co., Cincinnati
 Whitney Mfg. Co., Hartford, Conn.

Lathe Accessories and Attachments

McCrosky Tool Corporation, Headville, Pa.
 Modern Tool Co., Erie, Pa.
 Simmons Machine Co., Albany, N. Y.

Lathes, Automatic

National Acme Company, Cleveland

Classified Finding Index

Lathes, Bench

Blount Co., J. G., Everett, Mass.

Lathes, Engine

Barnes Co., W. F. & John, Rockford, Ill.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Davis Machine Tool Co., Rochester, N. Y.
 Lehmann Machine Co., St. Louis, Mo.
 Monarch Machine Tool Co., Sidney, Ohio
 Mueller Machine Tool Co., Cincinnati
 Rockford Lathe & Drill Co., Rockford, Ill.
 Ryerson & Son, Joseph T., Chicago
 Standard Lathe Works, Cincinnati
 Willard Machine Tool Co., Cincinnati

Lathes, Foot Power

Barnes Co., W. F. & John, Rockford, Ill.

Lathes, Horizontal Turret

Davis Machine Tool Co., Rochester, N. Y.

Lathes, Speed and Hand

Blount Co., J. G., Everett, Mass.

Lockers, Shelving and Cupboards, Steel

Terrell's Equipment Co., Grand Rapids, Mich.

Mandrels, Expanding

Nicholson & Co., W. H., Wilkes-Barre, Pa.

Mandrels, Solid

Nicholson & Co., W. H., Wilkes-Barre, Pa.

Measuring Devices

Van Keuren Co., The, Boston

Metal Cutting Machines, Sheet

Quickwork Co., St. Marys, Ohio
 Ryerson & Son, Joseph T., Chicago
 Savage Co., W. J., Knoxville, Tenn.
 Way Co., A. F., Hartford, Conn.

Milling Attachments

Brown & Sharpe Mfg. Co., Providence, R. I.
 Burke Machine Tool Co., Conneaut, Ohio
 Hinckley Machine Works, Hinckley, Ill.
 Willard-Middletown Machine Co., Cincinnati

Milling Machines, Bench

Burke Machine Tool Co., Conneaut, Ohio
 Carter & Hakes Mch. Co., W. Winsted, Conn.
 Simmons Machine Co., Albany, N. Y.

Milling Machines, Hand

Burke Machine Tool Co., Conneaut, Ohio
 Carter & Hakes Mch. Co., W. Winsted, Conn.
 United States Machine Tool Co., Cincinnati
 Whitney Mfg. Co., Hartford, Conn.

Milling Machines, Horizontal

Beaman & Smith Co., Providence, R. I.

Milling Machines, Plain

American Milling Machine Co., Cincinnati
 Beaman & Smith Co., Providence, R. I.
 Brown & Sharpe Mfg. Co., Providence, R. I.
 Burke Machine Tool Co., Conneaut, Ohio
 Ryerson & Son, Joseph T., Chicago

Milling Machines, Portable

Fedrick Tool & Machine Co., Philadelphia
 Underwood Corp., H. B., Philadelphia

Milling Machines, Universal

American Milling Machine Co., Cincinnati
 Brown & Sharpe Mfg. Co., Providence, R. I.

Milling Machines, Vertical

Beaman & Smith Co., Providence, R. I.
 Brown & Sharpe Mfg. Co., Providence, R. I.
 Burke Machine Tool Co., Conneaut, Ohio
 Taylor & Penn Co., Hartford, Conn.

Motors, Electric

Reliance Electric & Eng. Co., Cleveland
 Wisconsin Electric Co., Racine, Wis.

Nut Facing Machines

Victor Tool Co., Inc., Waynesboro, Pa.

Oil Cups

Gits Bros. Mfg. Co., 1940 S. Kilbourn Av., Chicago
 Tucker, W. C. & F. C., Hartford, Conn.

Oil Extractors

Curtis, Albert B., Estate, Worcester, Mass.

Oil Hole Covers

Tucker, W. C. & F. C., Hartford, Conn.

Pattern Shop Machinery

Towsley Mfg. Co., John T., Cincinnati

Pipe Bending Machines

Fedrick Tool & Machine Co., Philadelphia
 Underwood Corp., H. B., Philadelphia

Pipe Cutting and Threading Machines

Signal & Keeler Mch. Wks., Edwardsville, Ill.
 Simmons Machine Co., Albany, N. Y.

Piston and Piston Ring Machines

National Acme Company, Cleveland.

Planer Attachment, Radius

Underwood Corp., H. B., Philadelphia

Planer Attachment, Slotting

Moore Co., H. A., Rochester, N. Y.

Planer Tools, Circular

Underwood Corp., H. B., Philadelphia

Planers, Valve Seat, Portable

Fedrick Tool & Machine Co., Philadelphia
 Underwood Corp., H. B., Philadelphia

Polishing and Buffing Machines

Blount Co., J. G., Everett, Mass.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 New Britain Machine Co., New Britain, Conn.
 Wilmarth & Morman Co., Grand Rapids,
 Wisconsin Electric Co., Racine, Wis. (Mich.)

Presses, Arbor

Atlas Press Co., Kalamazoo, Mich.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Lourie Mfg. Co., Springfield, Ill.
 Nicholson & Co., W. H., Wilkes-Barre, Pa.
 Weaver Mfg. Co., Springfield, Ill.

Presses, Broaching

Atlas Press Co., Kalamazoo, Mich.
 Lourie Mfg. Co., Springfield, Ill.

Presses, Foot

Atlas Press Co., Kalamazoo, Mich.
 Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
 Lourie Mfg. Co., Springfield, Ill.
 Rockford Iron Works, Rockford, Ill.
 Taylor & Penn Co., Hartford, Conn.

Classified Finding Index

Presses, Power

Hendley & Whittemore Co., Beloit, Wis.
Leshbough-Jordan T. & M. Co., Elkhart, Ind.
Rockford Iron Works, Rockford, Ill.
Ryerson & Son, Joseph T., Chicago
Willard-Middletown Machine Co., Cincinnati

Presses, Punch

Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
Lewthwaite Mch. Co., T. H., 417 E. 31st St., N. Y.
Leshbough-Jordan T. & M. Co., Elkhart, Ind.
Lourie Mfg. Co., Springfield, Ill.
Rockford Iron Works, Rockford, Ill.

Presses, Screw

Atlas Press Co., Kalamazoo, Mich.
Lourie Mfg. Co., Springfield, Ill.
Manhattan Machine & Tool Works, Grand Rapids, Mich.
Towley Mfg. Co., John T., Cincinnati
Weaver Mfg. Co., Springfield, Ill.

Pulley Machinery

Avoy Drilling Machine Co., Cincinnati

Punch Press Feeds

Rockford Iron Works, Rockford, Ill.

Punch, Shear and Bender, Hand

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago

Punches, Hand

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Mch. Co., T. H., 417 E. 31st St., New York
Whitney Metal Tool Co., Rockford, Ill.

Punches, Power

Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
Ryerson & Son, Joseph T., Chicago

Punches and Dies

Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
Lewthwaite Mch. Co., T. H., 417 E. 31st St., Rockford Iron Works, Rockford, Ill. (N. Y.)

Racks, Bar Stock

New Britain Machine Co., New Britain, Conn.

Reamer Holder, Floating

Victor Tool Co., Inc., Waynesboro, Pa.

Reamers, Adjustable

McCroskey Tool Corporation, Meadville, Pa.

Reamers, Cylinder

Hinckley Machine Works, Hinckley, Ill.
McCroskey Tool Corporation, Meadville, Pa.

Reamers, Solid

Eico Tool Corporation, Rockford, Ill.
McCroskey Tool Corporation, Meadville, Pa.
Ready Tool Co., Bridgeport, Conn.

Reels, Extension

Cincinnati Specialty Mfg. Co., Cincinnati

Riveting Machines

Grant Mfg. & Mch. Co., Bridgeport, Conn.
High Speed Hammer Co., Rochester, N. Y.

Rod Cutters

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
Lewthwaite Mch. Co., T. H., 417 E. 31st St., N. Y.
Tucker, W. C. & F. C., Hartford, Conn.

Saws, Slitting

Eico Tool Corporation, Rockford, Ill.

Scraping Machines, Pneumatic

Anderson Brothers Mfg. Co., Rockford, Ill.

Screw Driving Machines, Automatic

Reynolds Machine Co., Mansfield, Ohio

Screw Machines, Automatic

Brown & Sharpe Mfg. Co., Providence, R. I.
National Acme Company, Cleveland
New Britain Mch. Co., New Britain, Conn.

Screw Machines, Auxiliary

National Acme Company, Cleveland

Screws, Cap and Set

National Acme Company, Cleveland

Second-Hand Machinery Dealers

Bath & Co., Cyril J., Cleveland
Botwinik Brothers, New Haven, Conn.
Brown Machinery Co., St. Louis, Mo.
Brownell Machinery Co., Providence, R. I.
Dale Machinery Co., Inc., 641 Washington Blvd., Chicago
Enterprise Machinery Co., 32 S. Clinton St., Chicago
Empire Machinery Exchange, Cleveland
Esley Machinery Co., E. L., 555 Washington Blvd., Chicago
Federal Mch. Sales Co., 12 N. Jefferson St., Chicago
Graves Mch. Exe., 50 Church St., New York
Harris Bros. Co., W. 35th & Iron, Chicago
Hill, Clarke & Co., 625 Wash'tn Bl., Chicago
Industrial Machinery & Sales Co., 549 W. Washington Blvd., Chicago
Johnson & Sons Machinery, Co. Wm. C., St. Louis, Mo.
Jones Machine Tool Co., Cincinnati
Kemp Machinery Co., Baltimore, Md.
Little Co., W. F., Cleveland
Lucas & Son, Inc., J. L., Bridgeport, Conn.
McCabe Lathe & Machinery Corp., J. J., 149 Broadway, New York
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Machine Tool Sales, 549 Washington Blvd., Chicago
Metc & Merryweather Mch. Co., Cleveland
Niles-Bement-Fond Co., 111 Broadway, N. Y.
Norton-Broadway Mch. Co., Cincinnati
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Oviatt & Co., D. C., Cleveland
Parker Co., Frank H., 1st National Bank Bldg., Chicago
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Herbert, Ltd., Alfred, 50 Church St., New York

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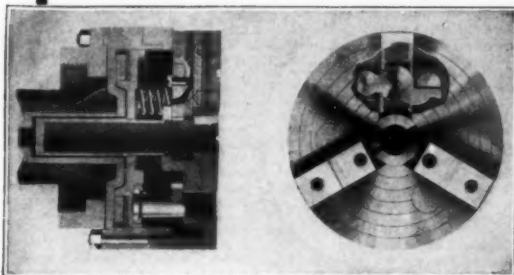
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Pilot Bar Chuck

Made in 8"—10"—12"—15"—18" sizes of either Two or Three Jaw Manufacturing or Adjustable Types

The Frontier Pilot Bar Chuck is designed to meet the conditions where tools must be piloted. It is of the same simple construction as the other types of Frontier Chucks and is attached to the working end of the spindle. The Pilot Bushing is screwed into the face of the chuck which makes it absolutely rigid and concentric with the outside diameter at all times. The Pilot Tube will allow pilots of any desired length to be used. This chuck will bear your investigation. We also manufacture standard chucks without pilot bushings and drill press chucks.

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30 Letchworth Street,

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Originators"**



**New Britain,
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